WILDLIFE REVIEW

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BUREAU OF SPORT FISHERIES AND WILDLIFE

The December 1970 issue of *Wildlife Review* is the last of those scheduled for inclusion in *Wildlife Abstracts, 1961-70*. Many items published in late 1970 would ordinarily have been covered in subsequent issues, but an effort was made to include them instead in *WR 140* in order for them to appear in the *Wildlife Abstracts* volume. As a result, this issue is nearly double its normal size. Although dated December 1970, it was still in manuscript in May 1971. *WR 141* will be dated June 1971.

The next abstract volume will include *Wildlife Review* numbers 101-140, and is in the process of being indexed. Publication of the volume is not expected before 1972. Subscribers will be notified when *Wildlife Abstracts, 1961-70* is available for distribution.

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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor,
and Mary L. Fisher, editorial assistant.

AVAILABILITY OF REPRINTS AND PUBLICATIONS

Wildlife Review does not distribute any of the papers abstracted herein, nor can the editor of *Wildlife Review* undertake to obtain copies of these papers for anyone. A reprint of an article published in a journal may be available from the author, from the organization with which the author is affiliated, or from the publisher of the journal in which the article appeared. When an author's address is known, it is shown in square brackets following the citation. Addresses of most wildlife organizations can be obtained from the *Conservation Directory*, an annual publication available from the National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C. 20036, at a price of $1.50 a copy. This directory lists more than 900 agencies and organizations concerned with natural resource use.

NATURAL RESOURCES & CLIMATE

Carlozzi, Carl A., and Alice A. Carlozzi. CONSERVATION AND CARIBBEAN REGIONAL PROGRESS. *Antioch Press* (Yellow Springs, Ohio). ix + 151 p., 5.75 x 8.75 in. 1968. Price $4.00. *WR 140: 2*

A partial inventory of the natural and historic resources of the Lesser Antilles is given. Following a discussion of the history of the region, its present economic and social condition, and the state of its natural environment, an inventory of those sites most suitable for protection, reclamation, or development is given. The authors note what is being done and what can be done to foster a continuing program of conservation in the region. Parks, reserves, historic monuments, and recreational areas on both national and international bases are proposed; the necessary machinery and agencies to accomplish such programs are described.

Conservation Foundation. WILDLIFE RESOURCES IN A CHANGING WORLD. *Conservation Foundation*. 60 p. July 1968. *WR 140: 2*

The proceedings of the symposium on the wildlife profession and its changing roles, held at the 1966 Annual Meeting of the American Association for the Advancement of Science, are presented. The topics of wildlife resources in a changing world, wildlife in urban and suburban America, wildlife in rural and wild America, wildlife in inland waters, wildlife in coastal and marine waters, and wildlife in developing countries are discussed.

Darling, F. Fraser, and John P. Milton, editors. FUTURE ENVIRONMENTS OF NORTH AMERICA. *Nat. Hist. Press* (Garden City, N.Y.). xv + 767 p., 6.5 x 9.5 in. 1966. Price $12.50. *WR 140: 2*

Thirty-four ecologists, regional planners, economists, jurists, and conservationists met to discuss the nature of the pressures on our environment at a conference convened by The Conservation Foundation in 1965. In individual papers and in six debates they discussed the organic world and its environment, the developmental history and future of the various regions, economic and social factors in the environment, ecological regional planning and development, and organizational procedures for implementating environmental control. Man's impact on the continent and his responsibility for the future quality of his environment were of primary concern.

Matthews, William H. III. A GUIDE TO THE NATIONAL PARKS: THEIR LANDSCAPE AND GEOLOGY / VOLUME I, THE WESTERN PARKS. *Nat. Hist. Press* (Garden City, N.Y.). xi + 480 p., 150 figs., 6.25 x 9.5 in. 1968. Price $7.95. *WR 140: 2*

Nineteen of the United States National Parks west of the Rocky Mountains are included in this discussion of the geological formation and present appearance of the parks. It is a practical guide to the geology of the mountains, geysers, caverns, lakes, and rock formations, as well as to many non-geological features of the parks such as roads, trails, campsites, fishing, accommodations, museums,

and recreation facilities created for the visitor. The park descriptions are intended to aid the potential visitor in understanding and appreciating the remarkable landscapes protected by the park system and the processes by which they were formed, as well as to provide an idea of the services available to the visitor in each park.

Matthews, William H. III. A GUIDE TO THE NATIONAL PARKS: THEIR LANDSCAPE AND GEOLOGY / VOLUME II, THE EASTERN PARKS. *Nat. Hist. Press* (Garden City, N.Y.). xvi + 287 p., 98 figs., 6.25 x 9.5 in. 1968. Price $6.95. *WR 140: 3*

The geological history and present appearance of thirteen of the National Parks east of the Mississippi are explained, and visitor services are enumerated for each of the parks.

Namnandorj, O. CONSERVATION AND WILD LIFE IN MONGOLIA. *Field Res. Projects.* iii + 26 p. 1970. Available from Field Res. Projects, Coconut Grove, Fla. *WR 140: 3*

A general account of the physiography of Mongolia with accounts of the nature reserves and the 21 spp. that are protected on them.

New York Fish and Wildlife Management Board, Education Committee. NEW YORK'S FISH & WILDLIFE RESOURCE / BIOLOGY, MANAGEMENT AND USE. *N.Y. Dept. Conserv.* 82 p., illus. 1968. *WR 140: 3*

Twelve articles on selected subjects, published individually in *The Conservationist*, have been compiled in booklet form: *Characteristics of wildlife*, Oliver H. Hewitt; *The wildlife community*, Maurice M. Alexander; *Wildlife dynamics*, William G. Sheldon; *Wildlife and man*, Ralph T. King; *Challenges in wildlife management*, Gustav A. Swanson; *Farm game management*, Robert F. Perry; *Forest game management*, Earl F. Patric; *The management of wetlands wildlife*, Dirck Benson; *Stream fishery management*, Dwight A. Webster; *Lakes, ponds and fish*, Henry A. Regier; *The city man's view of wildlife*, Henry G. Williams, Jr.; and *Wildlife resources--What of tomorrow?*, E. L. Cheatum.

Rymon, Larry Maring. A CRITICAL ANALYSIS OF WILDLIFE CONSERVATION IN OREGON. *Ph.D. thesis, Oreg. State Univ.* 441 p. 1969. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 3*

Study of Oregon's wildlife resources from the period prior to white settlement until the present time, with projections on conditions to the year 2010.

Srivastava, B. P. WILDLIFE IN THE TEHRI GARHWAL HIMALAYAS--THE PROBLEM OF THEIR CONSERVATION. *Indian Forest* 95(11): 800-806. 1969. [From Biol. Abstr. 51(21), 1970.] *WR 140: 3*

Train, Russell E., chairman. ENVIRONMENTAL QUALITY / THE FIRST ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY. *Council Environmental Quality.* xxv + 326 p. Aug. 1970. For sale by Superintendent of Documents at $1.75, paper. *WR 140: 3*

In accordance with the National Environmental Policy Act, the Council has prepared a report to Congress on the status and conditions of the Nation's environment. A number of specific suggestions for action are included in discussing the problems of pollution, land use, population, and waste of resources. The report includes discussion of the following subjects: Understanding environmental problems; Federal organization for environmental quality; Water pollution; Air pollution; Man's inadvertent modification of weather and climate; Solid wastes; Noise, pesticides, and radiation; Population, growth, and resources; Land use; International cooperation; Citizen participation; Environmental education; and Present and future environmental needs.

SOILS

Abmeyer, Walter, and Howard V. Campbell. SOIL SURVEY OF SHAWNEE COUNTY, KANSAS. *SCS.* i + 77 p., 17 figs. + single-fold maps based on aerial photos and bound in. June 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on wildlife management.

Ackerman, Franklin S., and others. SOIL SURVEY OF BERKS COUNTY, PENNSYLVANIA. *SCS.* i + 125 p., 8 figs. + single-fold maps based on aerial photos and bound in. Sept. 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on the use of soils for wildlife.

Byrne, James G., and others. SOIL SURVEY OF THE McCREARY-WHITLEY AREA, KENTUCKY. *SCS.* i + 83 p., 14 figs. + single-fold maps based on aerial photos and bound in. June 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on the use of soils for wildlife.

Gelderman, Frederick W., and others. SOIL SURVEY OF THE SAFFORD AREA, ARIZONA. *SCS.* i + 57 p., 7 figs. + single-fold maps based on aerial photos and bound in. June 1970. For sale by Supt. Documents. *WR 140: 4*

Jacquot, Louis, and others. SOIL SURVEY OF RANDALL COUNTY, TEXAS. *SCS.* i + 61 p., 21 figs. + single-fold maps based on aerial photos and bound in. June 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on the use of soils for wildlife.

Matthews, Earle D., and others. SOIL SURVEY OF NEW CASTLE COUNTY, DELAWARE. *SCS.* i + 97 p., 9 figs. + single-fold maps based on aerial photos and bound in. Oct. 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on wildlife.

Parker, Dale E., and others. SOIL SURVEY OF OZAUKEE COUNTY, WISCONSIN. *SCS.* i + 92 p., 11 figs. + single-fold maps based on aerial photos and bound in. Sept. 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on the use of the soils for wildlife.

Paschke, John E., and others. SOIL SURVEY OF LAKE COUNTY, ILLINOIS. *SCS.* i + 82 p., 11 figs. + single-fold maps based on aerial photos and bound in. Sept. 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on plantings for wildlife habitat.

Rivera, Luis H., and others. SOIL SURVEY OF THE VIRGIN ISLANDS OF THE UNITED STATES. *SCS.* i + 78 p., illus. Aug. 1970. For sale by Supt. Documents. *WR 140: 4*

Seago, J. B., and others. SOIL SURVEY OF WELLS COUNTY, NORTH DAKOTA. *SCS.* i + 84 p., 25 figs. + single-fold maps based on aerial photos and bound in. June 1970. For sale by Supt. Documents. *WR 140: 4*
With a section on wildlife.

Sease, E. C., and others. SOIL SURVEY OF SHELBY COUNTY, TENNESSEE. *SCS.* i + 53 p., 13 figs. + single-fold maps based on aerial photos and bound in. Nov. 1970. For sale by Supt. Documents. *WR 140: 4*

CONSERVATION EDUCATION

Brown, Robert Edward. ANALYSES OF ATTITUDE CHANGES IN ADULTS AFTER PARTICIPATION IN A CONSERVATION-ORIENTED BIOLOGY COURSE. *Ph.D. thesis, Mich. State Univ.* 123 p. 1969. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 4*

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[Cooperative Extension Service Publications.] *USDA*. Variously paged. Available from state and county Cooperative Extension Service agents. *WR 140: 5*

The following publications are prepared by state universities in cooperation with the U.S. Department of Agriculture for the Cooperative Extension Service. This listing is by no means complete; it merely gives an indication of the scope of Extension Service publications. Other publications are listed individually in *WR* from time to time. For more detailed information write the local Extension agent, in care of the state university.

Auburn Univ., Ala.	
Circ. E-1	FOR MORE TROPHY BUCKS & PRIZE GOBBLERS
Circ. E-4	RODENT CONTROL IN POULTRY HOUSES
Univ. Calif., Davis	
	WILDLIFE CROPS ON PRIVATE LAND
	DEER HUSBANDRY
	RECREATION POTENTIAL ON FARM LANDS
Univ. Ga., Athens	
Circ. 565	BEAVER CONTROL
Circ. 578	WILDLIFE PLANTINGS
Bull. 645	BUILDING WILDLIFE HOUSES AND FEEDERS
Bull. 649	WANTED: MORE WOOD DUCKS IN GEORGIA
Leafl. 50	MOLE CONTROL
Kans. State Univ., Manhattan	
C-397	CONTROLLING COYOTE DAMAGE
C-400	HOW TO CALL COYOTES
	WANTED! BLACK FOOTED FERRET
Univ. Minn., St. Paul	
Bull. 346	GAME BIRDS FROM FIELD TO KITCHEN
Rutgers, New Brunswick, N.J.	
Leafl. 433	A GUIDE TO NATURE STUDY IN NEW JERSEY
Ohio State Univ., Columbus	
L-121	CONTROLLING BIRD PESTS IN YOUR CROPS AND FEEDLOTS
Bull. 349	LARCENY IN THE HENHOUSE
Pa. State Univ., University Park	
Spec. Circ. 79	AQUATIC PLANTS / MANAGEMENT AND CONTROL IN PENNSYLVANIA
Spec. Circ. 84	BIRDS, LANDS AND PEOPLE
Spec. Circ. 97	EASTERN CHIPMUNKS
Spec. Circ. 117	MOLES
Leafl. 288	WOODCHUCKS
Leafl. 291	ANIMAL TRACKS
Leafl. 293	MUSKRATS
Leafl. 295	SNAKES
	DEER MANAGEMENT IN PENNSYLVANIA CONSERVATION / LIVING IN HARMONY WITH LAND
Texas A&M Univ., College Station	
B-1018	COMMON AQUATIC PLANTS / IDENTIFICATION / CONTROL
Va. Polytech. Inst., Blacksburg	
Publ. 29	PLANS FOR ATTRACTING BIRDS
Publ. 127	THE PURPLE GRACKLE
Publ. 128	NOTES ON REPELLING BIRDS IN CROPS AND TREES
Publ. 159	THE EUROPEAN STARLING
Publ. 160	EUROPEAN STARLING CONTROL METHODS IN VIRGINIA
Publ. 168	THE EASTERN GRAY SQUIRREL
Publ. 211	STARLING CONTROL RECOMMENDATIONS IN FEEDLOTS AND POULTRY RANGES
Publ. 272	RATS AND THEIR CONTROL
Publ. 283	LIVE-TRAPPING OBJECTIONABLE ANIMALS
Publ. 285	THE BOBWHITE QUAIL
Univ. Wis., Madison	
Spec. Circ. 144	SHELVES, HOUSES, FEEDERS FOR BIRDS AND SQUIRRELS

CONSERVATION EDUCATION--Continued

Erickson, David Lee. ATTITUDES ABOUT WILDLIFE AND PREFERENCES IN TELEVISION PROGRAMS: A COMMUNICATION STUDY. *Ph.D. thesis, Ohio State Univ.* 185 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 6*

Kolosov, A. M. [TRAINING FOR WILDLIFE MANAGEMENT IN THE USSR.] *VII Intern. Congr. Game Biol.* p. 535-536. 1967. In Russian with French summ. *WR 140: 6*

Marckworth, Gordon D. STATISTICS FROM SCHOOLS OF FORESTRY FOR 1969: DEGREES GRANTED AND ENROLLMENTS. *J. Forestry* 68(8): 499-500. Aug. 1970. *WR 140: 6*
[Univ. Wash., Seattle.] Wildlife management accounted for 13% of the 2,427 undergraduate degrees conferred in 1969 and 22% of the 520 Master degrees. The complete breakdown of degrees conferred which has appeared in tables 2-10 in the past, has been deleted from publication; the complete report is available upon request from the national office of the Society of American Foresters.

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Kirchshofer, Rosl, editor. THE WORLD OF ZOOS / A SURVEY AND GAZETTEER. *Viking Press* (New York). 327 p., 120 photos, 7.25 x 9.75 in. 1968. Price $12.95. *WR 140: 6*
Discussions by several distinguished experts dealing with different aspects of zoos, the problems of feeding and caring for animals in captivity, and displaying them to the public, are combined with photographs of many unusual zoo inhabitants. The major zoos, aquariums, and wildlife reserves in many countries are listed and described in a comprehensive gazetteer section.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Benton, Allen H., and William E. Werner, Jr. FIELD BIOLOGY AND ECOLOGY (Second edition). *McGraw-Hill Book Co.* (New York). ix + 499 p., 156 figs., 6.25 x 9.25 in. 1966. Price $9.50. *WR 140: 6*
Field biology is the study of life under natural conditions or in its natural habitat. This textbook is designed to provide a basic knowledge of ecology and field biology. Chapters on taxonomic principles, energy transfer in natural communities, community ecology, succession in terrestrial and in aquatic communities, the marine environment, natural populations, animal behavior, economic field biology, the use of biological literature, and the choice and conduct of a field problem, provide a well-rounded beginning for field study.

Burton, Maurice, and others. THE LAROUSSE ENCYCLOPEDIA OF ANIMAL LIFE. *McGraw Hill Book Co.* (New York). 640 p., 900 photos + 64 color pls., 8.5 x 11.75 in. 1967. Price $25.00. *WR 140: 6*
The *Encyclopedia* is a complete one-volume guide to the animals of the world, systematically covering nearly all animals from amoebas to elephants. It is divided into 24 sections, each representing a major zoological group. Every section is introduced by a summary of the general principles of anatomy and physiology and of behavioral and evolutionary data. Entries on individual species include information about size, color, some general habits, and distribution. Special emphasis has been given to American species both in the text and in the illustrations, but coverage includes animals of the entire world. The many photographs show the animals in their natural surroundings whenever possible.

Čolić, Dušan B., and Vera Broz. CONSÉQUENCES DE L'APPAUVRISSEMENT SOUDAIN DE LA COMPOSITION DES COMMUNAUTÉS BIOLOGIQUES, AFFECTANT L'ÉTAT, COMPOSITION ET ABONDANCE DU GIBIER. [CONSEQUENCES OF THE SUDDEN IMPOVERISHMENT OF THE COMPOSITION OF BIOLOGICAL COMMUNITIES AFFECTING THE CONDITION, COMPOSITION AND ABUNDANCE OF GAME.] *VII Intern. Congr. Game Biol.* p. 491-499. 1967. In French with Russian summ. *WR 140: 6*

XUM

Elisofon, Eliot. JAVA DIARY. *Macmillan Co.* (New York). 298 p., 147 photos, 6.75 x 9.5 in. 1969. Price $9.95. *WR 140: 7*

The long hours of a professional photographer are chronicled during his attempts to complete a photo essay on the one-horned *Rhinoceros sondaicus*, found on the island of Java. Many of the wildlife species and plant forms encountered on Udjong-Kulon, a Javanese peninsula, were photographed and identified, and the habits of birds, mammals, and reptiles were recorded from the photographer's observations, but the elusive rhinoceros stayed beyond camera range.

Ennion, E. A. R., and N. Tinbergen. TRACKS. *Oxford Univ. Press* (New York). 63 p., 93 photos, 8.5 x 11.25 in. 1967. Price $4.25. *WR 140: 7*

The tracks and traces of activity left by animals on soft ground provide a wealth of information to those who can interpret the signs. Photographs of such traces, with an explanatory text and sometimes with a superimposed drawing of the animal along with the photograph, provide clues as to what can be inferred from footprints, feathers, and fur. Mammals, birds, reptiles, and even insects can be identified by their tracks and their activities surmised.

Kelsall, John P. OBSERVATIONS OF BIRDS AND MAMMALS AT BLUENOSE LAKE. *Arctic* 23(3): 190-196. Sept. 1970. In English with French and Russian summ. *WR 140: 7*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] The species of birds and mammals observed during a biological exploration of Bluenose Lake, centred at 68°28'N., 119°45'W., are described. Thirty-five species of birds were seen, many of which were breeding, and many of which constitute range extensions. A lack of variability in the habitat, for birds in particular, is probably the chief factor limiting the number of species.--From abstr.

Kullmann, E. DIE TIERWELT OSTAFGHANISTANS IN IHREN GEOGRAPHISCHEN BEZIEHUNGEN. [THE FAUNA OF EAST AFGHANISTAN AND ITS GEOGRAPHICAL RELATIONS.] *Freunde Kolner Zoo* 13(1): 3-25, 25 figs. 1970. In German with English summ. *WR 140: 7*

[Univ. Bonn, Bonn, Germany.]

Norderhaug, Magnar. IAKTTAGELSER OVER DYRELIVET PA SVALBARD 1968. [OBSERVATIONS OF ANIMAL LIFE IN SVALBARD 1968.] *Norsk Polarinst. Arbok 1968.* p. 101-106, illus. 1970. [From Biol. Abstr. 51(17), 1970. In Norwegian with Russian and English summ.] *WR 140: 7*

Orr, Robert T. VERTEBRATE BIOLOGY (Second edition). *W. B. Saunders Co.* (Philadelphia). xi + 483 p., 234 figs., 6.25 x 9.5 in. 1966. Price $8.00. *WR 140: 7*

An introduction to systematics, general and special characteristics of the phyla, and classification tables are presented for fish, amphibians, reptiles, birds, and mammals. In addition, behavioral traits of vertebrates of interest to the biologist are discussed, specifically: distribution, territoriality, and home range in vertebrate species; population movements and a basic explanation of population dynamics; reproduction, growth, and development of vertebrate young; and a discussion of the ability of some species to achieve dormancy.

Orr, Robert T. ANIMALS IN MIGRATION. *Macmillan Co.* (New York). xv + 303 p., 61 figs. + 19 pls., 6.75 x 9.5 in. 1970. Price $12.50. *WR 140: 7*

Animals in Migration is a comprehensive account of the most recent developments and concepts concerning the movements of animal populations. The underlying principles of migration and the factors that tend to influence it are presented and discussed; the migrations of the invertebrates, land and water birds, and the mammals are described. The mechanics of orientation have been studied intensively in representative species of fishes, amphibians, reptiles, birds, and mammals, and the results of these studies have contributed much to the understanding of migration patterns. Some of the methods by which migration has been studied are described.

Pefaur, Jaime, Wladimir Hermosilla, Francesco di Castri, Renato Gonzalez, and Fernando Salinas. ESTUDIO PRELIMINAR DE MAMÍFEROS SILVESTRES CHILENOS: SU DISTRIBUCIÓN, VALOR ECONÓMICO E IMPORTANCIA ZOONOTICA. [PRELIMINARY STUDIES OF WILD ANIMALS OF CHILE: THEIR DISTRIBUTION, ECONOMIC VALUE AND ZOONOTIC IMPORTANCE.] *Rev. Soc. Med. Vet.* (Chile) 18(1-4): 3-15, [3 figs.]. 1968. In Spanish. *WR 140: 8*

[Univ. Chile, Santiago, Chile.] An analysis of 33 spp. of Chilean wild mammals.

Stanković, Siniša. LE GIBIER DANS LES BIOCÉNOSES CONTEMPORAINES. [WILDLIFE IN CONTEMPORARY BIOCENOSES.] *VII Intern. Congr. Game Biol.* p. 13-32. 1967. In French and Russian. *WR 140: 8*

[Inst. Biol. Istraživanja, Belgrade, Yugoslavia.]

Sterling, Dorothy. THE OUTER LANDS / A NATURAL HISTORY GUIDE TO CAPE COD, MARTHA'S VINEYARD, NANTUCKET, BLOCK ISLAND, AND LONG ISLAND. *Nat. Hist. Press* (Garden City, N.Y.). 192 p., illus. + 16 pls., 6.25 x 9.5 in. 1967. Price $4.50. *WR 140: 8*

The natural history of the seaside, from the geological formation of the islands during the ice age to the distinctive plant and animal inhabitants found there today, are described. Communities are discussed informally; organisms are identified and their habits and life processes told. The book is not so much a reference work as it is a guide book to the unique plant and animal life of the shore.

Taylor, R. H., B. D. Bell, and P. R. Wilson. ROYAL ALBATROSSES, FERAL SHEEP AND CATTLE ON CAMPBELL ISLAND. *New Zealand J. Sci.* 13(1): 78-88, 7 figs. Mar. 1970. *WR 140: 8*

[DSIR, Wellington, New Zealand.] Summary: The original vegetation and wildlife of sub-antarctic Campbell Island were greatly modified by sheep farming from 1895 to 1931. The 42 square mile island is the main breeding area of the southern royal albatross *(Diomedea e. epomophora)* and, due to its climate and isolation, supports many other scientifically interesting animals, and plants. It was declared a Reserve for the Preservation of Flora and Fauna in 1954. In January 1969 about 4,400 nesting pairs of royal albatrosses, 3,000 feral sheep and 22 feral cattle were counted on the island. Albatrosses had increased by 90% since 1958 and sheep by over 200% since 1961; cattle numbers have remained stationary. In the absence of sufficient information on ecological changes that would follow the extermination of sheep about which there has been some controversy, a fence will be erected across the island, sheep removed from the northern half, and ecological research intensified.

Varona, Luis S., and Orlando H. Garrido. VERTEBRADOS DE LOS CAYOS DE SAN FELIPE, CUBA, INCLUYENDO UNA NUEVA ESPECIE DE JUTÍA. [VERTEBRATES FROM CAYOS DE SAN FELIPE, CUBA, INCLUDING A NEW SPECIES OF HUTIA (CAPROMYIDAE).] *Poeyana Ser. A* no. 75. p. 1-26, 3 figs. 12 Aug. 1970. In Spanish with English synopsis. *WR 140: 8*

[Inst. Biol. Acad. Sci. Cuba, Havana, Cuba.] Mammals, birds and reptiles of islets south of La Coloma. *"Capromys sanfelipensis."*

WILDLIFE--NATURAL AREAS & REFUGES

Campbell, A. C. CENTRAL KALAHARI GAME RESERVE: II. *African Wildl.* 22(4): 321-327, illus. 1968. [From Biol. Abstr. 51(16), 1970.] *WR 140: 8*

Cowie, Mervyn. I WALK WITH LIONS. *Macmillan Co.* (New York). 245 p., illus., 5.75 x 8.5 in. 1964. Price $4.95. *WR 140: 8*

Africa's great animal preserves, the Royal Parks of Kenya, were created in the face of much indifference and active opposition. The story of their formation is told with humor and feeling by the first director of the system, who

personally fought to protect the fast vanishing African wildlife. The establishment of the national parks system, the problems encountered in overcoming bureaucratic red tape and adverse public opinion, the difficulties in enforcing protective measures once the parks had been established, are told against an animal-filled background in which the wildlife is accorded a sympathetic and intimate portrayal.

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Cook, Francis R. RARE OR ENDANGERED CANADIAN AMPHIBIANS AND REPTILES. *Canadian Field-Nat.* 84(1): 9-16. Jan.-Mar. 1970. *WR 140: 9*
[Natl. Mus. Canada, Ottawa, Ontario, Canada.] Of 110 forms (84 spp.) of amphibians and reptiles known to occur in Canada, at least 29 can be considered rare or endangered in this country with respect to either their entire Canadian distribution or to certain, usually relict, populations of particular interest. Destruction of habitat is perhaps the greatest danger to their continued survival.--From abstr.

Dementiev, G. P. [PROTECTION OF THE FAUNA.] *VII Intern. Congr. Game Biol.* p. 485-489. 1967. In Russian with French summ. *WR 140: 9*
[Moscow State Univ., Moscow, USSR.]

Fleming, C. A. RATS AND MOA EXTINCTION. *Notornis* 16: 210-211. 1969. [From Auk 87(3), 1970.] *WR 140: 9*

Geroudet, Paul. LES ESPÈCES D'OISEAUX MENACÉES EN EUROPE. [THE THREATENED BIRD SPECIES IN EUROPE.] *Biol. Conserv.* 1(3): 213-217. 1969. [From Biol. Abstr. 51(15), 1970. In French with English summ.] *WR 140: 9*
[Sci. Fonds Mond. Nature "World Wildl. Fund," Morges, Switzerland.]

Godfrey, W. Earl. CANADA'S ENDANGERED BIRDS. *Canadian Field-Nat.* 84(1): 24-26. Jan.-Mar. 1970. *WR 140: 9*
[Natl. Mus. Nat. Sci., Ottawa, Ontario, Canada.] Abstract: Lists with annotations *Haliaeetus leucocephalus, Pandion haliaetus, Falco mexicanus, Falco peregrinus, Tympanuchus cupido, Grus americana, Numenius borealis,* and the subspecies *Falco columbarius richardsonii* and *Grus canadensis tabida* as avian taxa the status of which is thought to be endangered in Canada.

Holloway, C. W., editor. IUCN ELEVENTH TECHNICAL MEETING / PAPERS AND PROCEEDINGS / NEW DELHI, INDIA / 25-28 NOVEMBER 1969 / VOLUME II / THIRD SESSION: SURVIVAL SERVICE COMMISSION / PROBLEMS OF THREATENED SPECIES. *IUCN Publ. New Ser.* no. 18. 132 p. 1970. In English with French summaries. "Published by and obtainable at US$3.00 per copy from IUCN, 1110 Morges, Switzerland." *WR 140: 9*
Includes the following papers: *The endangered large mammals of South Asia,* G. B. Schaller and N. M. Simon; *Conserving the Asiatic lion,* P. Joslin; *The vanishing Indian tiger,* K. S. Sankhala; *Philippine tamaraw, here to stay,* Jesus B. Alvarez, Jr.; *The swamp deer of North Kheri,* Arjan Singh; *The tiger of the terai with special reference to the Kheri forests of Uttar Pradesh, India,* Arjan Singh; *The great Indian bustard* Choriotis nigriceps *(Vigors),* Salim Ali; *The great Indian bustard* Choriotis nigriceps *(Vigors), a vanishing species in India, and some suggestions for its preservation,* P. D. Gupta; *A report on the 1969 status of the monkey-eating eagle of the Philippines,* Jesus B. Alvarez, Jr.; *A review of the present status and position of endangered species of Indian reptiles,* J. C. Daniel; *The endangered crocodiles of India,* R. N. Misra; *Endangered plant species and their habitats,* H. Santapau; *The need for conservation of flora and floral provinces in southeast Asia,* J. K. Maheshwari; *Protection of rare and endangered plants in the Indian flora,* K. C. Sahni; *Endangered plants and conservation in the islands of the Indian Ocean,* R. Melville; *Endangered plant species and their habitats--a review of the Indian situation,* K. Subramanyam and C. P. Sreemadhavan; and *Some endangered plants and threatened habitats in southeast Asia,* I. M. Qureshi and O. N. Kaul.

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES--Continued

Mueller-Using, Detlev. BEWAHRUNGSHEGE. [PRESERVATION FROM EXTINCTION.] *Bonner Zool. Beitr.* 20(1-3): 38-41. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 10*
[Inst. Jagdkunde, Univ. Goettingen, Goettingen, Germany.] Preservation from extinction is based on year-round protection of an endangered wildlife species, one of its sexes or age groups, protection of a staple food, or predator control.

Nasimovich, A. A. RARE AND ENDANGERED SPECIES OF MAMMALS AND THEIR PROTECTION IN THE U.S.S.R. *Field Res. Projects.* 10 p. 1970. Transl. from Russian of Geogr. Sbornik no. 4. p. 163-172. 1970. Translation available from Field Res. Projects, Coconut Grove, Fla. *WR 140: 10*
Annotated listing of 28 spp.

Novakowski, N. S. ENDANGERED CANADIAN MAMMALS. *Canadian Field-Nat.* 84(1): 17-23. Jan.-Mar. 1970. *WR 140: 10*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] A brief survey of the extinct and vanishing mammals of Canada shows twelve species in danger of extinction and three species already extinct. The critical population status of some of the species is stressed.--From abstr.

Vučković, Mihajlo. THE STATE AND PROTECTION OF GAME IN MONTENEGRO. *VII Intern. Congr. Game Biol.* p. 65-69. 1967. In English with Russian summ. *WR 140: 10*
[Zavod za zaštitu Prirode Crne Gore, Titograd, Yugoslavia.]

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Evans, William F. COMMUNICATION IN THE ANIMAL WORLD. *Thomas Y. Crowell Co.* (New York). x + 182 p., illus., 5.75 x 8.75 in. 1968. Price $5.95. *WR 140: 10*
The problems surrounding reproduction, such as attracting a mate, warding off rivals and completing courtship rituals give rise to many forms of communication among most species of animals. Social living also requires communicative processes among colony members, as with bees, ants, and baboons. These and other communicative needs are discussed along with the mechanics of creating a means of interaction--by feel, smell, sound, taste, or sight. The systems of symbolic language used in food gathering, defense, courtship, mating, caring for young, and asserting territorial privileges are described for fishes, insects, reptiles, amphibians, birds, and mammals.

Hinde, R. A. THE BASES OF AGGRESSION IN ANIMALS. *J. Psychosom. Res.* 13: 213-219. 1969. [From Ibis 112(4), 1970.] *WR 140: 10*

Hinde, R. A. CONTROL OF MOVEMENT PATTERNS IN ANIMALS. *Quart. J. Exptl. Psychol.* 21: 105-126. 1969. [From Ibis 112(4), 1970.] *WR 140: 10*

Pujman, Vojtech F., and Daniela Hanusova. ERYTHROGRAM VARIATIONS BETWEEN NORMAL AND PARASITIZED MATURE AND IMMATURE PARTRIDGES, PHEASANTS AND HARES. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 163-166. July 1970. *WR 140: 10*
[Pharm. & Biochem. Res. Inst., Prague, Czechoslovakia.]

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Aldrich, John W. REVIEW OF THE PROBLEM OF BIRDS CONTAMINATED BY OIL AND THEIR REHABILITATION. *US F&WS Resource Publ.* 87. iv + 23 p., illus. May 1970. For sale by Supt. Documents at 35¢. *WR 140: 10*
Contents: History and scope of contamination, Methods of cleaning oiled birds, Toxicological and physiological effects of oil and related stresses on birds, Care of cleaned oiled birds, Inducing premature molt in birds, and References.

Anas, Raymond E., and Alfred J. Wilson, Jr. ORGANOCHLORINE PESTICIDES IN FUR SEALS. *Pesticides Monitoring J.* 3(4): 198-200. Mar. 1970. *WR 140: 11*
[Marine Mammal Biol. Lab., Seattle, Wash.] Abstract: Samples of liver and brain tissue from 30 northern fur seals *(Callorhinus ursinus)* and 7 fur seal fetuses that were collected on the Pribilof Islands, Alaska, in 1968 and off the Washington coast in 1969, were analyzed for organochlorine pesticides. These compounds were found in all of the fur seals and in three of the fetuses. Polychlorinated biphenyls (PCB) were not detected. Of 30 samples of liver tissue from the seals, all contained DDE; 21, DDD; 24, DDT; and 3 contained dieldrin. Of the 30 brain samples, all contained DDE; 5, DDD; 4, DDT; and none contained dieldrin. DDE was present in liver tissue from three of the fetuses and in brain tissue from two.

Anas, Raymond E., and Alfred J. Wilson, Jr. ORGANOCHLORINE PESTICIDES IN NURSING FUR SEAL PUPS. *Pesticides Monitoring J.* 4(3): 114-116. Dec. 1970. *WR 140: 11*
[Marine Mammal Biol. Lab., Seattle, Wash.] Abstract: Samples of muscle, brain, liver, blubber, and ingested milk from five nursing fur seal pups, *Callorhinus ursinus*, were analyzed for organochlorine pesticides and polychlorinated biphenyl compounds (PCB's). Of 25 samples of tissue and ingested milk, 25 contained DDE; 19, DDD; 22, DDT; and 9 contained dieldrin. All of the samples of ingested milk and tissues, with the exception of brain tissue, contained trace amounts of PCB's. Concentrations of DDE, DDD, and DDT in the liver and brain of 4-month-old nursing pups tended to be higher than those found in 4-month fetuses studied previously.

Bitman, Joe, Helene C. Cecil, and George F. Fries. DDT-INDUCED INHIBITION OF AVIAN SHELL GLAND CARBONIC ANHYDRASE: A MECHANISM FOR THIN EGGSHELLS. *Science* 168(3931): 394-395. 1 May 1970. *WR 140: 11*
[Agr. Res. Serv., Beltsville, Md.] Abstract: The shell-forming glands of Japanese quail fed *p,p'*-DDT or *p,p'*-DDE had carbonic anhydrase activity 16 to 19% lower than shell glands of quail on a diet free of pesticides.

Borg, Karl. SOME CURRENT ASPECTS ON THE PESTICIDE PROBLEM. *VII Intern. Congr. Game Biol.* p. 285-288. 1967. In English with Russian summ. *WR 140: 11*
[State Veterinary Med. Inst., Stockholm, Sweden.]

Borg, Karl. LANDFAUNAN OCH DE KVICKSILVERHALTIGA BEKAMPANINGSMEDLEN. [THE LAND FAUNA AND THE MERCURY CONTAINING PESTICIDES AND WEED-KILLERS.] *Fauna & Flora* 63(5): 186-189, illus. 1968. [From Biol. Abstr. 51(15), 1970. In Swedish.] *WR 140: 11*
[State Veterinary Med. Inst., Stockholm, Sweden.]

Borg, K., K. Erne, E. Hanko, and H. Wanntorp. EXPERIMENTAL SECONDARY METHYL MERCURY POISONING IN THE GOSHAWK *(ACCIPITER G. GENTILIS L.)*. *Environ. Pollut.* 1: 91-104, 8 figs. 1970. *WR 140: 11*
[State Veterinary Med. Inst., Stockholm, Sweden.] Three goshawks receiving chicken muscle and liver (average dietary mercury content 13 ppm) as the sole food died within 30, 38 and 47 days and one goshawk receiving only muscle (average mercury content 10 ppm) within 39 days.--From abstr.

Brown, N. J., and A. W. A. Brown. BIOLOGICAL FATE OF DDT IN A SUB-ARCTIC ENVIRONMENT. *J. Wildl. Mgmt.* 34(4): 929-940, 1 fig. Oct. 1970. *WR 140: 11*
[Min. Agr., Lusaka, Zambia.] Abstract: Residues of DDT plus metabolites were determined in 660 samples of soil, plants, and animals in a 16-square mile area at Fort Churchill treated with 22 airsprays at 0.22 lb/acre applied between 1947 and 1964. The average residues of DDT plus metabolites in the fat of birds ranged between 3 ppm in the willow ptarmigan *(Lagopus lagopus)* and 64 ppm in the arctic tern *(Sterna paradisaea)* as compared with 0.2-12 ppm in fat from birds taken in the surrounding unsprayed area. The proportion of DDE found in the various bird species was partly dependent on the DDE production of their plant or invertebrate food. Of the tissues assessed, the pectoral muscle had the lowest residue, except in the case of the arctic tern and Bonaparte's gull *(Larus philadelphia)*.

Cooke, A. S. THE EFFECT OF *O,P'*-DDT ON JAPANESE QUAIL. *Bull. Environmental Contamination & Toxicol.* 5(2): 152-157. Mar.-Apr. 1970. *WR 140: 12*
[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.] There is little difference in mean oviduct weights of treated and untreated individuals, but there were reductions in mean ovary and testes weights for the treated birds. *o,p'*-DDT may suppress the pituitary gonadotrophin secretion of quail used in the present experiment by means of a feedback mechanism if it affects in an oestrogenic manner. But blood calcium and lipid levels are sensitive indicators of oestrogenic activity and since little or no change has been detected in either parameter during the present study, it would suggest that *o,p'*-DDT may exert an effect on the endocrine system. Evidence suggests that *o,p'*-DDT could be implicated in the decline of egg shell thickness.--From discussion.

Coon, Donald W., and Robert R. Fleet. THE ANT WAR. *Environment* 12(10): 28-38, illus. Dec. 1970. *WR 140: 12*
[Texas A&M Univ., College Station.] The imported fire ant (IFA) does not affect overall populations of birds and mammals in an infested area. Mirex, used widely to control the IFA, is not as toxic to quail, pheasants, and mallards, but appears to reduce reproductive success in some small mammals.

Dahlgren, Robert B., Raymond L. Linder, and Kenneth K. Ortman. DIELDRIN EFFECTS ON SUSCEPTIBILITY OF PENNED PHEASANTS TO HAND CAPTURE. *J. Wildl. Mgmt.* 34(4): 957-959. Oct. 1970. *WR 140: 12*
[S. Dak. Coop. Wildl. Res. Unit, Brookings.] Abstract: The offspring of pheasants *(Phasianus colchicus)* which were given 16 capsules once a week of lactose or combinations of lactose and 4, 6, or 10 mg technical grade dieldrin were placed in outdoor pens when 5 weeks of age. In July, August, October, December, and January, these young pheasants were caught by hand. They were more easily caught if both parents had received dieldrin, followed in order by those where hens only and cocks only had received dieldrin.

Fedorenko, A. P. [TOXICOLOGICAL EFFECTS OF CHEMICAL COMPOUNDS ON GAME ANIMALS AND BIRDS.] *VII Intern. Congr. Game Biol.* p. 289-292. 1967. In Russian. *WR 140: 12*
[Inst. Zool., Akad. Nauk, Kiev, USSR.]

Friend, Milton, and Daniel O. Trainer. SOME EFFECTS OF SUBLETHAL LEVELS OF INSECTICIDES ON VERTEBRATES. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 335-342. Oct. 1970. *WR 140: 12*
[Univ. Wis., Madison.]

Giles, Robert H., Jr. THE ECOLOGY OF A SMALL FORESTED WATERSHED TREATED WITH THE INSECTICIDE MALATHION-S^{35}. *Wildl. Monographs* no. 24. 81 p., 36 figs. Dec. 1970. *WR 140: 12*
[Va. Polytech. Inst., Blacksburg.] The faunal ecology of two deciduous 8-ha watersheds near Dover, Ohio, was studied intensively for 1 year. The second year, one of the watersheds was aerially sprayed with 0.81 kg/ha of malathion labeled with sulfur 35. No effects from the insecticide were observed on bacteria or fungi. Soil microarthropods were affected for a short time. Earthworms and snails were unaffected. Fishes and crayfishes, sensitive to malathion in tests, were unaffected in the stream environment. Insect numbers were greatly reduced, but recovered rapidly. Reptiles and amphibians were unaffected. Birds seemed to react to the insecticide for 2 days but no lasting effects were noted. Populations of mice and chipmunks appeared to be reduced at least by 30% on the treated area. Shrews and larger mammals apparently were unaffected.--From summ.

Gill, John A., and B. J. Verts. TOLERANCES OF TWO POPULATIONS OF RING-NECKED PHEASANTS TO DDT. *J. Wildl. Mgmt.* 34(3): 630-636, 2 figs. July 1970. *WR 140: 13*

[Brainerd Area Vocational Tech. School, Brainerd, Minn.] Abstract: Tolerance to DDT of a population of ring-necked pheasants *(Phasianus colchicus)* occupying an area to which DDT was applied for 8 years, and of a population inhabiting a nearby area with no history of insecticide use was investigated during 1966-68. Median lethal concentrations (LC_{50}) of technical DDT in diets of week-old chicks indicated that progeny from the unexposed population were significantly more tolerant to DDT than progeny from the exposed population *(P<0.025)*. Levels of tolerance could not be explained on the basis of amounts of DDT residues passed to young through eggs, lengths of time that parents were in captivity, or to the number of generations in captivity. If DDT acted as a selective force on the population of pheasants occupying the area treated with DDT, differences in tolerance of the two populations must have been greater prior to use of DDT on the treated area.

Gish, Charles D., and Nicholas J. Chura. TOXICITY OF DDT TO JAPANESE QUAIL AS INFLUENCED BY BODY WEIGHT, BREEDING CONDITION, AND SEX. *Toxicol. & Appl. Pharmacol.* 17(3): 740-751, 2 figs. Nov. 1970. *WR 140: 13*

[Patuxent Wildl. Res. Center, Laurel, Md.] Controlled experiments were utilized to simulate the stresses on wild birds of breeding condition and of weight loss due to migration. Light conditions in the laboratory were manipulated to produce Japanese quail *(Coturnix coturnix japonica)* in breeding condition and not in breeding condition. Within each of these groups, some birds were partially starved before dosage and some were fully fed. Birds were then fed dietary levels of 0, 700, 922, 1214, or 1600 ppm dry weight of *p,p'*-DDT for a period of 20 days or until death. During the early portion of the dosage period, females in breeding condition were less sensitive to DDT than were females not in breeding condition and males. After 10 days on dosage, however, the cumulative mortality of females in breeding condition rapidly approached that of males and of females not in breeding condition. Food restriction prior to dosage, strains of quail, breeding conditions, and sexes resulted in weight differences and a corresponding accentuation or delay of the effects of the different levels of DDT.--From abstr.

Haila, Yrjö. M.T. PALVAN ÖLJYONNETTOMUUS. [THE "PALVA" OIL TANKER CATASTROPHE OFF THE SW COAST OF FINLAND.] *Suomen Riista* 22: 7-13, 5 figs. 1970. In Finnish with English summ. *WR 140: 13*

Hanko, E., K. Erne, H. Wanntorp, and K. Borg. POISONING IN FERRETS BY TISSUES OF ALKYL MERCURY-FED CHICKENS. *Acta Vet. Scandinavica* 11: 268-282, 6 figs. 1970. In English with Swedish summ. *WR 140: 13*

[Natl. Vet. Inst., Stockholm, Sweden.]

Holden, A. V. INTERNATIONAL COOPERATIVE STUDY OF ORGANOCHLORINE PESTICIDE RESIDUES IN TERRESTRIAL AND AQUATIC WILDLIFE, 1967/1968. *Pesticides Monitoring J.* 4(3): 117-135. Dec. 1970. *WR 140: 13*

[Freshwater Fisheries Lab., Pitlochry, Scotland.] Abstract: A two-part collaborative study of organochlorine residues in wildlife was carried out by 17 laboratories in 11 countries. The first part involved the analysis of four test samples containing organochlorine residues; one sample was a solution of standard chemicals, while the other three were cod-liver oil, chicken egg, and sprat *(Clupea sprattus)* homogenate. This part provided a basis for comparison of the relative efficiency and accuracy of the laboratories in residue analysis. The second part of the program consisted of the sampling and analysis of four species of wildlife from areas believed to be free of pesticide usage in each country. The results indicate the degree of background contamination of the environment, as exemplified by the species selected, which were the starling, pike, marine mussel, and dogfish. The range of variation of residues among individuals of a natural population is much larger than that due to analytical errors or to differences between laboratories. Distributions within populations are non-Gaussian, necessitating large samples for the detection of relatively small interpopulation differences.

Holt, Gunnar, and Johan Sakshaug. ORGANOCHLORINE INSECTICIDE RESIDUES IN WILD BIRDS IN NORWAY 1965-1967. *Nord. Vet. Med.* 20(12): 685-695, illus. 1968. [From Biol. Abstr. 51(19), 1970. In English with German and Danish summ.] *WR 140: 14*
[Nat. Vet. Inst., Oslo, Norway.]

Johnels, Alf G., Carl Edelstam, Mats Olsson, and Torbjörn Westermark. KVICKSILVER SOM MILJÖGIFT I SVERIGE. [MERCURY AS AN ENVIRONMENTAL POISON IN SWEDEN.] *Fauna & Flora* 63(5): 172-185, illus. 1968. [From Biol. Abstr. 51 (15), 1970. In Swedish.] *WR 140: 14*
[Naturhist. Riksmus., Stockholm, Sweden.]

Johnson, Eric Van. ROBIN-PESTICIDE ECOLOGY ON A COMMERCIAL FRUIT FARM. *Ph.D. thesis, Cornell Univ.* 100 p. 1969. [From Dissertation Abstr Intern. 30(12B), 1970.] *WR 140: 14*
Observations made in 1965 on a commercial apple, peach and cherry farm near New Paltz, New York, suggested that passerine birds were nesting successfully in orchard trees despite the many poisons sprayed. Pesticide levels in orchard soils were high, and invertebrates there were extremely scarce. Experimental evidence suggests that worms, a prime robin food item, could not survive there. Pesticide levels in the soils of unsprayed foraging areas were low, and invertebrates were abundant and contained low residue levels. Robins generally showed low levels of DDT and related compounds in all tissues examined.

Johnson, Lauren G., Robert L. Morris, and Harry Harrison. PRELIMINARY STUDY OF PESTICIDE LEVELS IN THE EGGS OF IOWA PHEASANTS, BLUE WING TEAL AND COOTS. *Bull. Environmental Contamination & Toxicol.* 5(5): 474-478. Sept.-Oct. 1970. *WR 140: 14*
[Univ. Iowa, Iowa City.]

Jones, P. Hope, G. Howells, E. I. S. Rees, and J. Wilson. EFFECT OF 'HAMILTON TRADER' OIL ON BIRDS IN THE IRISH SEA IN MAY 1969. *British Birds* 63(3): 97-110, 4 figs. 1970. *WR 140: 14*
[Bedwen, Bro Enddwyn, Dyffryn Ardudwy, Merionethshire, Wales.] Following damage to the tanker *Hamilton Trader* off the mouth of the River Mersey on 30th April 1969, about 700 tons of fuel oil were spilled into the north Irish Sea. More than 4,400 birds (91% of them guillemots *Uria aalge* and 4% razorbills *Alca torda*) are known to have been killed. Another 1,500--and possibly as many as 6,250--are estimated to have been lost at sea. An experiment, involving the dropping at sea of ringed dead auks, showed that auk corpses floating in the open sea are likely to move with the wind and at 2.2% of its velocity. Near the coast, local current and tidal movements can have greater influence than the wind on direction of drift, while those corpses which sink are likely to move according to the pattern of bottom currents. Twenty per cent of the experimentally ringed corpses were recovered within four months; it is suggested, from circumstantial evidence, that perhaps more than 50% sank within eleven days.--From summ.

Klingeren, B. van, J. H. Koeman, and J. L. van Haaften. A STUDY ON THE HARE *(LEPUS EUROPEUS)* IN RELATION TO THE USE OF PESTICIDES IN A POLDER IN THE NETHERLANDS. *VII Intern. Congr. Game Biol.* p. 309-316. 1967. In English with German summ. *WR 140: 14*
[Inst. Veterinary Pharmacol., Utrecht, Netherlands.]

Komarek, E. V., Sr. ENVIRONMENTAL MANAGEMENT. *Proc. Tall Timbers Conf. Ecol. Animal Control Habitat Mgmt.* no. 1. p. 3-11. 1969. *WR 140: 14*
[Tall Timbers Res. Sta., Tallahassee, Fla.] Persistent use of toxic chemicals without any other manipulation of the environment leads to development of resistance by the pest species, and consequent loss of control. Habitat manipulation is an area of control which is largely unknown and unresearched but which appears to offer more reliable species-specific control.

Korytin, S. A. [THE ANIMALS REACTION TO SOME CHEMICAL ATTRACTANTS.] *VII Intern Congr. Game Biol.* p. 317-320. 1967. In Russian with English summ. *WR 140: 15*

[Inst. Zhivotnogo Syr'ya & Pushniny, Kirov, USSR.] Ranking by families was Procyonidae, Ursidae, Canidae, Felidae, Hyaenidae, Mustelidae, and Viverridae.

Krantz, W. C., B. M. Mulhern, G. E. Bagley, A. Sprunt IV, F. J. Ligas, and W. B. Robertson, Jr. ORGANOCHLORINE AND HEAVY METAL RESIDUES IN BALD EAGLE EGGS. *Pesticides Monitoring J.* 4(3): 136-140. Dec. 1970. *WR 140: 15*

[Russell Natl. Wildl. Range, Lewistown, Mont.] Abstract: Bald eagle eggs collected in 1968 from nests in Wisconsin, Maine, and Florida all contained residues of DDE, DDD, dieldrin, heptachlor epoxide, and polychlorinated biphenyls. Many also contained traces of DDT. Eggs from five nonproductive nests sampled in Maine contained much higher residues than did eggs collected from either productive or nonproductive nests in Wisconsin and Florida.

Lincer, Jeffrey L., and David B. Peakall. METABOLIC EFFECTS OF POLYCHLORINATED BIPHENYLS IN THE AMERICAN KESTREL. *Nature* 228(5273): 783. 21 Nov. 1970. *WR 140: 15*

[Cornell Univ., Ithaca, N.Y.]

Linder, Raymond L., and Robert B. Dahlgren. OCCURRENCE OF ORGANOCHLORINE INSECTICIDES IN PHEASANTS OF SOUTH DAKOTA. *Pesticides Monitoring J.* 3(4): 227-232. Mar. 1970. *WR 140: 15*

[S. Dak. Coop. Wildl. Res. Unit, Brookings.] Abstract: Residues of benzene hexachloride, lindane, dieldrin, DDT, DDE, and DDD occurred among 12 of 100 adult pheasants collected in a baseline study during the winters of 1964-67 in the eastern half of South Dakota. DDE was most commonly found, and residue levels of all chemicals ranged from 0-8.0 ppm. Residues of dieldrin, aldrin, heptachlor epoxide, DDT, DDE, DDD, lindane, and endrin were found in adults, juveniles, or eggs collected in 1967 from study areas in Yankton and Clay Counties where past pesticide usage was highest in the State. Organochlorines occurred in fat or brain of all 48 adult birds collected, with dieldrin and aldrin occurring most frequently. Only two adults contained more than 1 ppm of any one insecticide, and detectable levels ranged from 0.01 ppm to 2.35 ppm for all residues combined. All juveniles contained residues of at least one chemical, and levels were as high as 1.21 ppm for all residues combined. All except 5 of 70 eggs contained residues of at least one insecticide, and dieldrin and heptachlor epoxide occurred more often than other chemicals. The highest concentration of any one chemical was 1.58 ppm of dieldrin in one egg. All residues combined ranged from 0.01 ppm to 2.01 ppm for eggs.

Linder, Raymond L., Robert B. Dahlgren, and Yvonne A. Greichus. RESIDUES IN THE BRAIN OF ADULT PHEASANTS GIVEN DIELDRIN. *J. Wildl. Mgmt.* 34(4): 954-956. Oct. 1970. *WR 140: 15*

[S. Dak. Coop. Wildl. Res. Unit, Brookings.] Abstract: Game farm pheasants *(Phasianus colchicus)* were individually caged and administered capsules containing 2, 4, 6, 8, 10, 12, or 110 mg dieldrin. Analysis of brain tissue of 10 hens surviving 13 weekly treatments of 2, 4, or 6 mg and killed 7 days later showed 0.16-2.19 ppm dieldrin residue. Only 3% of birds dying during or after treatment had less than 2.00 ppm dieldrin in brain tissue and 8% had less than 3.00 ppm dieldrin. Dieldrin residues in brains averaged 5.75 among 38 birds dying during or after dieldrin administration and were not related to either dose level or total dose given. It appears that a level of 3 to 4 ppm or greater in the brain of a pheasant would indicate that death was caused by dieldrin.

Lockie, J. D. A FIELD STUDY OF THE EFFECTS OF CHLORINATED HYDROCARBONS ON GOLDEN EAGLES IN WEST SCOTLAND. *VII Intern. Congr. Game Biol.* p. 275-278. 1967. In English. *WR 140: 15*

[Univ. Edinburgh, Edinburgh, Scotland.]

Markham, O. D., and F. W. Whicker. RADIATION $LD50_{(30)}$ OF PIKAS *(OCHOTONA PRINCEPS)* IN THE NATURAL ENVIRONMENT AND IN CAPTIVITY. *Am. Midland Nat.* 84(1): 248-252, 2 figs. July 1970. *WR 140: 16*

[Colo. State Univ., Fort Collins.] Abstract: Estimates of the $LD50_{(30)}$ from ^{60}Co radiation were made for a group of pikas *(Ochotona princeps)* held in captivity and for another group observed in the natural environment near the summit of Mount Evans, Colorado. The $LD50_{30}$ estimate was 560 r (438-717 r; 95% confidence limits) for captive animals and 380 r (250-578 r) for pikas at Mount Evans. Mean survival time for irradiated pikas was 9 to 13 days in captivity and 5 to 7 days in the natural environment. Results are discussed in relation to artificial stresses resulting from captivity and natural stresses such as intraspecific competition and predation.

Massachusetts Audubon Society. SEPARATING BIRDS AND OIL. *Mass. Audubon News Letter* 10(2): 3-6, [5 figs.]. Oct. 1970. *WR 140: 16*

Improved methods for cleaning oiled birds have been developed at Philip B. Stanton's Wildlife Rehabilitation Center in Massachusetts. Birds are washed with Polycomplex A-11, fed dry foods, and detained until natural oils are replaced. Birds are released near protected ponds and are allowed to adjust gradually to the natural environment.

McIntyre, Sherwood C., Jr. CHLORINATED HYDROCARBON RESIDUES IN WHITE-TAILED DEER, RABBITS, AND BOBWHITE QUAIL ASSOCIATED WITH SOYBEAN PRODUCTION IN ALABAMA. *M.S. thesis, Auburn Univ.* 63 p. 1970. *WR 140: 16*

Milstein, P. le S. ÜBER BHC-VERGIFTETE HEUSCHRECKEN ALS NAHRUNG DES WEISSSTORCHS IN SÜDAFRIKA. [ON BHC (BENZOLHEXACHLORIDE)-POISONED LOCUSTS TAKEN BY WHITE STORKS IN SOUTH AFRICA.] *Vogelwarte* 23: 117-121. 1965. [From Ibis 112 (3), 1970. In German.] *WR 140: 16*

"Ciconia ciconia."

Mulhern, Bernard M., William L. Reichel, Louis N. Locke, Thair G. Lamont, Andre Belisle, Eugene Cromartie, George E. Bagley, and Richard M. Prouty. ORGANOCHLORINE RESIDUES AND AUTOPSY DATA FROM BALD EAGLES 1966-68. *Pesticides Monitoring J.* 4(3): 141-144. Dec. 1970. *WR 140: 16*

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Sixty-nine bald eagles found moribund or dead in 25 States during 1966-68 were analyzed for pesticide residues. Residues of polychlorinated biphenyls and DDE were detected in all samples of eagle carcasses; residues of dieldrin were detected in 68 and residues of DDD in 64; DDT, heptachlor epoxide, and DCBP were detected less frequently. Eight specimens had levels of dieldrin in the brain within the lethal range, and another probably died of DDT poisoning. Autopsy revealed that illegal shooting was the most frequent cause of mortality of these eagles; electrocution, impact injuries, probable lead poisoning, and infectious avian diseases were other causes of mortality.

Nováková, Eliška, and Vojtech Pujman. INFLUENCE DES POLLUTIONS INDUSTRIELLES ET DE L'EMPLOI DE PRODUITS CHIMIQUES EN AGRICULTURE SUR L'HÉMOGRAMME DU LIÈVRE. [THE EFFECT OF THE INDUSTRIAL POLLUTED WATERS AND THE UTILIZATION OF THE CHEMICAL PRODUCTS IN AGRICULTURE ON THE HAEMOGRAM OF THE HARE.] *VII Intern Congr. Game Biol.* p. 293-296. 1967. In French with English summ. *WR 140: 16*

Peakall, David B., and Jeffrey L. Lincer. POLYCHLORINATED BIPHENYLS / ANOTHER LONG-LIFE WIDESPREAD CHEMICAL IN THE ENVIRONMENT. *BioScience* 20(17): 958-964, 1 fig. 1 Sept. 1970. *WR 140: 16*

[Cornell Univ., Ithaca, N.Y.] Current knowledge of polychlorinated biphenyl compounds is summarized and evaluated. Their toxicity, biological magnification, occurrence in nature, relation to DDT are discussed.

Peterle, Tony. TRANSLOCATION AND BIOACCUMULATION OF CL-36 DDT IN A FRESHWATER MARSH. *VII Intern. Congr. Game Biol.* p. 297-307. 1967. In English with Russian summ. *WR 140: 17*
[Ohio State Univ., Columbus.]

Prouty, Richard M., and Eugene Cromartie. RECOVERY OF DDT AND DIELDRIN FROM TISSUES OF *COTURNIX JAPONICA* STEPWISE DURING RESIDUE ANALYSIS. *Environmental Sci. & Technol.* 4(9): 768-769. Sept. 1970. *WR 140: 17*
[Patuxent Wildl. Res. Center, Laurel, Md.]

Przygodda, Wilfried. QUECKSILBERHALTIGE SAATGUTBEIZMITTEL UND VÖGEL. [MERCURY-CONTAINING SEED DISINFECTANTS AND BIRDS.] *Angew. Ornithol.* 3(2): 79-82. 1968. [From Biol. Abstr. 51(15), 1970. In German.] *WR 140: 17*
[Aegidiusstrasse 94, Essen/Bredeney, Germany.]

Rehfus, Ruth, coordinator. MERCURY CONTAMINATION IN THE NATURAL ENVIRONMENT / A BIBLIOGRAPHY PREPARED COOPERATIVELY BY THE LIBRARIES / U.S. DEPARTMENT OF THE INTERIOR. *USDI Office Library Serv.* 32 p. July 1970. *WR 140: 17*
Included are bibliographies for: uses and consumption, regulation and control, mercury in fishes and the aquatic environment, mercury in wildlife and birds, effects of mercury on laboratory animals, effects of mercury on humans, mercury in animal foodstuffs, methods of analysis: biological material, methods of analysis: other, and general and unclassified publications. The following titles from the "mercury in wildlife and birds" section have not been listed previously in Wildlife Review: *Distribution of mercury compounds in fish and birds*, Jorgen Backstrom; *Mercury poisoning in Swedish wildlife*, K. Borg and others; *Mercury in living organisms*, Karl Borg and others; *Mercury residues in wild birds in Norway*, Gunnar Holt; *Birds give warning*, G. Lofroth and M. E. Duffy; and [*Analytical results of residual mercury in the Japanese storks*, Ciconia ciconia boyciana *Swinhoe, which died at Obama and Toyooka regions*], Toshio Muto and Takahisa Suzuki.

Reydellet, Maurice. LES PESTICIDES UTILISES EN AGRICULTURE. [THE PESTICIDES USED IN AGRICULTURE.] *VII Intern. Congr. Game Biol.* p. 269-273. 1967. In French and German. *WR 140: 17*
[Conseil Intern. de la Chasse, Gap, France.]

Robinson, J. BIRDS AND PEST CONTROL CHEMICALS. *Bird Study* 17(2): 195-228. June 1970. *WR 140: 17*
[Shell Res., Ltd., Tunstall Lab., Sittingbourne, Kent, England.] Summary: The various factors contributing to the dispersion of pesticides in the environment are discussed, and it is concluded that dispersion over large distances is probably mainly dependent upon biological mechanisms of movement, and that such dispersal occurs only in the case of compounds that are relatively stable, physically, chemically and biochemically. The pharmacokinetic behaviour of organochlorine insecticides is summarised and discussed in relation to biological mechanisms of dispersal. Recent work on the toxicology of DDT and dieldrin is reviewed, together with the information now available on the population status of various species of birds in Britain. The results of the Common Birds Census indicate that pesticides have probably had no adverse effect upon farmland birds since 1962. The possibility of using the annual totals of the Nest Record Scheme and the numbers of pulli ringed as indicators of changes in population is briefly discussed. The recent changes in the population of British predators are assessed in relation to organochlorine insecticides and some of the difficulties in the interpretation of the presently available information are indicated.

Robison, William H. ACUTE TOXICITY OF SODIUM MONOFLUOROACETATE TO CATTLE. *J. Wildl. Mgmt.* 34(3): 647-648. July 1970. *WR 140: 17*
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: The LD_{50}'s and 95% confidence limits for sodium monofluoroacetate (1080) were 0.393 (0.247-0.625) mg/kg for Hereford cows and 0.221 (0.149-0.327) mg/kg for Hereford steer and heifer calves. This high susceptibility demonstrates the importance of using safe techniques when applying 1080 grain baits for rodent control.

Saxon, James Glenn. THE BIOLOGY OF THE LIZARD, *CNEMIDOPHORUS TESSELATUS*, AND EFFECTS OF PESTICIDES UPON THE POPULATION IN THE PRESIDIO BASIN, TEXAS. *Ph.D. thesis, Texas A&M Univ.* 100 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 18*

Scarlatescu, G., H. Almasan, T. Babutia, M. Bodea, and N. Dragomir. RECHERCHES SUR LES PERTES DE GIBIER PENDANT LES TRAVAUX AGRICOLES. [RESEARCH INTO THE LOSSES OF WILDLIFE DURING AGRICULTURAL OPERATIONS.] *VII Intern. Congr. Game Biol.* p. 321-324. 1967. In French with Russian summ. *WR 140: 18*
[Inst. Recherches Forestières, Bucharest, Romania.]

Scott, Peter. OIL AND WILDLIFE IN ALASKA. *Oryx* 10(4): 220-226, 1 fig. + 4 pls. May 1970. *WR 140: 18*
Report on the trans-Alaskan oil pipeline and some of its possible effects on wildlife.

Seidensticker, John C. IV. A BIOPSY TECHNIQUE TO OBTAIN TISSUE FOR PESTICIDE RESIDUE ANALYSIS FROM FALCONIFORM BIRDS. *Bull. Environmental Contamination & Toxicol.* 5(5): 443-446, 1 fig. Sept.-Oct. 1970. *WR 140: 18*
[Idaho Coop. Wildl. Res. Unit, Moscow.] "The biopsy described here was developed to enable investigators to sample persistent pesticide residue levels present in various raptor species on a study area without sacrificing birds and, thus, altering the composition of the population under observation."

Sokolov, V. E., and A. I. Il'enko. [RADIOECOLOGY OF LAND VERTEBRATES.] *Usp. Sovrem. Biol.* 67(2): 235-255, illus. 1969. [From Biol. Abstr. 51(15), 1970. In Russian.] *WR 140: 18*
[Acad. Sci. USSR, Moscow, USSR.] "An analysis of existing data on the regular patterns of concentration of radionuclides by animals and their biological effect on a population."

Stevens, Deborah, and Aaron N. Moen. FUNCTIONAL ASPECTS OF WIND AS AN ECOLOGICAL AND THERMAL FORCE. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 106-114, 4 figs. 1970. *WR 140: 18*
[Cornell Univ., Ithaca, N.Y.] Summary: Heat transfer on the thermal surface of an animal is a dynamic process affected by wind which penetrates the hair, disturbs the insulating hair layer and alters the surface temperature and temperature profile. Changes in the orientation of the hair and other biological responses contribute to variation in the thermal parameters. Wind flow patterns are extremely variable, being influenced by vegetation, topography and the animal surface itself. Care must be taken to properly identify the wind flow characteristics and their effect on the thermal surface of the animal before attempting to use remote sensing to detect different animal species by their surface thermal characteristics.

Stewart, Max Lynn. DISTRIBUTION AND MOVEMENT OF RADIOACTIVE NUCLIDES, BOTH NATURAL AND ARTIFICIAL IN SOILS, VEGETATION, AND WILDLIFE. *Ph.D. thesis, Univ. Utah.* 181 p. 1970. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 18*

Tanis, J. J. C., and M. F. Mörzer Bruijns. THE IMPACT OF OIL-POLLUTION ON SEA BIRDS IN EUROPE. *Intern. Conf. on Oil Pollution of the Sea* no. 4. p. 67-74, 1 fig. 7-9 Oct. 1968. *WR 140: 18*
[RIVON, Zeist, Netherlands.] Catastrophes that take place during an unfavorable season in breeding, molting, feeding, migrating and wintering areas, where large proportions of the population are concentrated, are to be feared even more than the ordinary yearly toll that is taken of the birds by fuel-oil. Estimations of losses are low because of data being based upon numbers that wash ashore, therefore disregarding those lost at sea.--From discussion.

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.--Continued

Tucker, Richard K., and D. Glen Crabtree. HANDBOOK OF TOXICITY OF PESTICIDES TO WILDLIFE. *USDI F&WS Resource Publ.* no. 84. i + 131 p. Mar. 1970. Rev. June 1970. For sale by Supt. Documents at $2.00. *WR 140: 19*

[Denver Wildl. Res. Center, Denver, Colo.] "Research, operational, and administrative personnel concerned with the use of pesticides have had a long-standing need for a compendium of pesticide toxicity data for wildlife species that will provide, if not final answers, at least a basis for comparison of one pesticide with another. We hope that this handbook will fill that need. The chemicals chosen for testing include 108 pesticides ... to which wildlife are either most often exposed or most susceptible. Most are widely used or represent common families of chemicals applied to forests, rangeland, aquatic habitat, or agricultural areas that wildlife live in or frequent. For many of the newer compounds, these are the first tests on wildlife species. Acute toxicity data and a list of the common symptoms observed are presented for each pesticide."

Tucker, Richard K., and H. A. Haegele. EGGSHELL THINNING AS INFLUENCED BY METHOD OF DDT EXPOSURE. *Bull. Environmental Contamination & Toxicol.* 5(3): 191-194. May-June 1970. *WR 140: 19*

[Denver Wildl. Res. Center, Denver, Colo.] *"Colinus virginianus* and *Anas platyrhynchos."*

Wishart, William. A MERCURY PROBLEM IN ALBERTA'S GAME BIRDS. *Alberta Lands, Forests, Parks, Wildl.* 13(2): 4-9, [4 figs.]. Summer 1970. *WR 140: 19*

[Dept. Lands & Forests, Edmonton, Alberta, Canada.] Concentrations of mercury in upland game birds were lower in the fall compared to early summer. Amount of contamination can be largely reduced by the careful handling of all seed treatment fungicides.

WILDLIFE--PARASITES & DISEASES

Diesch, Stanley L., William F. McCulloch, John L. Braun, and John R. Davis. DETECTION AND ECOLOGY OF LEPTOSPIROSIS IN IOWA WILDLIFE. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6 (4): 275-288, 3 figs. Oct. 1970. *WR 140: 19*

[Univ. Minn., St. Paul.]

Enright, J. B., W. Longhurst, C. E. Franti, M. E. Wright, V. J. Dutson, and D. E. Behymer. SOME OBSERVATIONS ON DOMESTIC SHEEP AND WILDLIFE RELATIONSHIPS IN Q-FEVER. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 276-283, 6 figs. July 1969. *WR 140: 19*

[Univ. Calif., Davis.] The red-wing blackbird *(Agelaius phoeniceus)* has a peak prevalence of antibodies before that of sheep; the black-tailed jackrabbit and the ground squirrel seem to parallel sheep in cyclic responses, and the peak prevalence of Q-fever antibodies in the deer mouse occurs after the peak response in sheep. Black-tailed deer responses appear to be unrelated to sheep responses.--From abstr.

Gonzalez Luarca, Eutimio, and Jorge-Cárdenas Lara. RABIES IN MEXICO. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 243-246. Oct. 1970. *WR 140: 19*

Goret, P., A. Provost, and P. Perreau. LES ARBOVIRUS, AGENTS DE ZOONOSES AFRICAINES. [THE ARBOVIRUSES, AGENTS OF AFRICAN ZOONOSES.] *Bull. Soc. Pathol. Exotique* 61(4): 523-557. 1968. [From Biol. Abstr. 51(16), 1970. In French.] *WR 140: 19*

Human and animal infections, transmission cycle and maintenance of 17 arboviruses are reviewed.

WILDLIFE--PARASITES & DISEASES--Continued

Kotrlá-Erhardová, B., and A. Kotrlý. VERSCHLEPPUNG VON PARASITEN DER GATTUNG *FASCIOLOIDES* INFOLGE DER INTRODUKTION DES WILDES AUS VERSCHIEDENEN KONTINENTEN. [THE SPREAD OF PARASITES OF THE GENUS *FASCIOLOIDES* AS A RESULT OF THE INTRODUCTION OF GAME TO OTHER CONTINENTS.] *VIII Intern. Congr. Game Biol.* p. 265-268. 1970. In German with Russian summ. *WR 140: 20*
[VULHM, Prague, Czechoslovakia.]

McLean, R. G., and Karl D. Kappus. RABIES INFECTION AND SEROLOGY IN WILDLIFE FROM THE TAMPA BAY AREA. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 372. July 1969. *WR 140: 20*
[Natl. Communicable Disease Center, Atlanta, Ga.] Abstract: An investigation of a rabies epizootic in the Tampa Bay area of Florida was conducted in September, 1968. Manatee County reported 31 cases of wildlife rabies and adjacent Sarasota County reported 4 cases in 1968. The wildlife populations in both counties were sampled and the animals were tested for the presence of rabies virus and serum-neutralizing antibody. The trapping data indicated there were similar populations of raccoons and opossums in the counties. The raccoons collected in Sarasota County had a prevalence of 27.8% (5/18) SN antibody and raccoons from Manatee County had 20.0% (5/25) for comparable trap periods. Only a single rabies isolation was made; a raccoon collected in Manatee County. The similarity of the serologic findings from the samples was contrasted with the difference in the number of animal cases reported by the two counties.

McLean, Robert G. WILDLIFE RABIES IN THE UNITED STATES: RECENT HISTORY AND CURRENT CONCEPTS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 229-235, 3 figs. Oct. 1970. *WR 140: 20*
[Natl. Communicable Disease Center, Atlanta, Ga.]

Reilly, James R. THE SUSCEPTIBILITY OF FIVE SPECIES OF WILD ANIMALS TO EXPERIMENTAL INFECTION WITH *LEPTOSPIRA GRIPPOTYPHOSA*. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 289-294. Oct. 1970. *WR 140: 20*
[Univ. N. Dak., Grand Forks.]

Trainer, Daniel O. THE USE OF WILDLIFE TO MONITOR ZOONOSES. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 397-401, 2 figs. Oct. 1970. *WR 140: 20*
[Univ. Wis., Madison.]

Zimmermann, W. J. THE EPIZOOTIOLOGY OF TRICHINIASIS IN WILDLIFE. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 329-334. Oct. 1970. *WR 140: 20*
[Iowa State Univ., Ames.]

WILDLIFE--POPULATIONS & FLUCTUATIONS

Almasan, Horia A. CONTRIBUTIONS À LA CONNAISSANCE DE LA FLUCTUATION DES POPULATIONS DANS LES ESPÈCES D'INTÉRÊT CYNÉGÉTIQUE EN ROUMANIE. [CONTRIBUTIONS TO THE KNOWLEDGE OF POPULATION FLUCTUATIONS OF SPECIES OF CYNEGETIC INTEREST IN ROMANIA.] *VII Intern. Congr. Game Biol.* p. 56-64, 10 figs. 1967. In French with Russian summ. *WR 140: 20*
[Inst. Forest Res., Bucharest, Romania.]

Batelle-Northwest. ANALYSIS OF WILD ANIMAL POPULATIONS: AN APPRAISAL OF GENERALIZED POPULATION MODELS. *Batelle-Northwest Res. Rept.* iii + 82 p., 19 figs. June 1969. *WR 140: 21*

[P.O. Box 999, Richland, Wash.] Some of the problems in modelling vertebrate animal populations are discussed and a few simple models are described. These models were constructed largely to illustrate the major problems that have to be dealt with in producing useful "second generation" models. An operational point of view has been adopted for this study, in the sense of asking what functional representations will best represent present knowledge, rather than what the true state of affairs may be.--From intro.

Hairston, Nelson G., Donald W. Tinkle, and Henry M. Wilbur. NATURAL SELECTION AND THE PARAMETERS OF POPULATION GROWTH. *J. Wildl. Mgmt.* 34(4): 681-690, 3 figs. Oct. 1970. *WR 140: 21*

[Univ. Mich., Ann Arbor.] Abstract: The intrinsic rate of natural increase, *r*, is a constant that measures the ability of a population to grow under a given set of conditions. The Malthusian parameter, *m*, is a measure of genotypic rate of increase. Although the mathematical formulations for *r* and *m* are the same, their biological characteristics are different except in isogenic populations. Selection will always favor genotypes with the highest *m* under a given set of conditions, but such selection may result in a reduction of *r* for that population. The mechanism by which this process occurs is discussed and simulated, and it is concluded that evolutionary reductions in *r* are most likely to have occurred under conditions of density dependence. It is also suggested that the recent terms *r* and *K* ["the 'carrying capacity' of the environment for these homozygous alleles"] selection have mixed ecological parlance into evolutionary processes in a potentially confusing manner.

Hanson, W. R. ESTIMATING THE DENSITY OF AN ANIMAL POPULATION. *J. Res. Lepidoptera* 6(3): 203-247. 1967. [From Biol. Abstr. 51(21), 1970.] *WR 140: 21*

[Calif. State Coll., Los Angeles.]

Henny, Charles J., W. Scott Overton, and Howard M. Wight. DETERMINING PARAMETERS FOR POPULATIONS BY USING STRUCTURAL MODELS. *J. Wildl. Mgmt.* 34(4): 690-703. Oct. 1970. *WR 140: 21*

[Migratory Bird Populations Sta., Laurel, Md.] Abstract: A method for calculating parameters necessary to maintain stable populations is described and the management implications of the method are discussed. This method depends upon knowledge of the population mortality rate schedule, the age at which the species reaches maturity, and recruitment rates or age ratios in the population. Four approaches are presented which yield information about the status of the population: (1) necessary production for a stable population, (2) allowable mortality for a stable population, (3) annual rate of change in population size, and (4) age ratios in the population which yield a stable condition. General formulas for these relationships, and formulas for several special cases, are presented. Tables are also presented showing production required to maintain a stable population with the simpler (more common) mortality and fecundity schedules.

Huband, Paul. THE NATIONAL GAME CENSUS OF GREAT BRITAIN. *VIII Intern. Congr. Game Biol.* p. 237-240, 2 figs. 1970. In English with Russian summ. *WR 140: 21*

[Game Res. Assoc., Fordingbridge, Hampshire, England.]

McLaughlin, R. T. NAIROBI NATIONAL PARK CENSUS, 1968. *East African Wildl. J.* 8: 203. Aug. 1970. *WR 140: 21*

[Canadian Wildl. Serv., Ottawa, Canada.] Comparative counts of 11 game species for the period 1966-1968.

WILDLIFE--BIOMETRICS

Kabak, Irwin W. WILDLIFE MANAGEMENT: AN APPLICATION OF A FINITE MARKOV CHAIN. *Am. Statistician* 24(5): 27-29. Dec. 1970. *WR 140: 22*
[N.Y. Univ., New York.] The effectiveness of species protection can be demonstrated mathematically with a model demonstrating protected and unprotected population survival rates.

MacArthur, Robert. SPECIES PACKING AND WHAT INTERSPECIES COMPETITION MINIMIZES. *Proc. Natl. Acad. Sci. USA* 64(4): 1369-1371. 1969. [From Biol. Abstr. 51(15), 1970.] *WR 140: 22*
[Princeton Univ., Princeton, N.J.] The number of species which can coexist competitively can be shown to obey simultaneous differential equations equivalent to the conditions for minimizing a certain quadratic form. Seasonality and number of resources become the main limiting factors.

Ricklefs, Robert E. THE ESTIMATION OF A TIME FUNCTION OF ECOLOGICAL USE. *Ecology* 51(3): 508-513, 4 figs. Late Spring 1970. *WR 140: 22*
[Univ. Pa., Philadelphia.] Abstract: A general model is formulated relating the outcome of a series of events such as the capture or escape of a prey item to the probability, time and outcome of each kind of event. Application of the model and its derivation are demonstrated for predator hunting behavior and the nesting biology of birds.--Courtesy/ Paul A. Stewart.

St. Amant, J. L. S. THE DETECTION OF REGULATION IN ANIMAL POPULATIONS. *Ecology* 51(5): 823-828, 2 figs. Late Summer 1970. *WR 140: 22*
[Univ. Calif., Santa Barbara.] Suggests a statistical method for detecting population regulation from data on increases and decreases in the population.--Courtesy/ Paul A. Stewart.

WILDLIFE--TECHNIQUES

Anderson, G. R., S. W. Johnson, H. G. Melanson, and C. H. Schmidt. CONVERSION OF A STANDARD REFRIGERATOR TO A BIOLOGICAL INCUBATOR. *USDA Agr. Res. Serv.* 33-131. 11 p., 7 figs. Oct. 1968. *WR 140: 22*
[Metabolism & Radiation Res. Lab., ARS, USDA, Fargo, N. Dak.] Plans and instructions are given for the conversion of a standard household refrigerator to a biological temperature chamber with a sequential light sequence. Specifications met are: a temperature span of 45° to 100° F.; a temperature control of ±0.5°; a light sequence adjustable for 0.5 to 22.5 hours; and a fail-safe control to prevent overheating or overcooling. Costs are about $300.

Bullard, Roger W. VARIATION OF CHEMICAL CONCENTRATION IN SURFACE-COATED AND TABLETED GRAIN BAITS. *J. Wildl. Mgmt.* 34(4): 925-929. Oct. 1970. *WR 140: 22*
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: Liquid scintillation spectrometry was used to determine the quantity of recovered carbon^{14}-labelled Mesurol (4-[methylthio]-3,5-xylyl *N*-methylcarbamate) from individual baits. The six grain baits tested were cracked corn, wheat kernels, and oat groats, each formulated as surface-coated baits and as tablets (ground grain mixed with the chemical and tableted). The concentration of Mesurol on the surface-coated baits was highly variable, with coefficients of variation (CV) ranging from 21.0% (wheat) to 48.1% (cracked corn); Mesurol in individual cracked corn baits ranged from 99-532 µg. Such variation could easily explain erratic results in field baiting programs or laboratory tests. The tableted baits were more uniform (CV, 4.6-8.0%; greatest range, 274-360 µg) and are recommended for baiting situations where chemical concentration is critical.

Crier, John K. TETRACYCLINES AS A FLUORESCENT MARKER IN BONES AND TEETH OF RODENTS. *J. Wildl. Mgmt.* 34(4): 829-834, 3 figs. Oct. 1970. *WR 140: 22*
[Bur. Sport Fisheries & Wildl., P.O. Box 244, Hilo, Hawaii.] Abstract: Tetracyclines are antibiotics that chelate with calcium ions to induce a golden-yellow fluorescence in bones and teeth under UV light (3600-3700 Å). Three of

these compounds--demethylchlortetracycline (DMCT), doxycycline monohydrate (DC), and tetracycline hydrochloride (TC)--were tested on laboratory rats as potential markers for field studies with rodents. DMCT proved the superior compound. A single oral dose of 50 mg/kg of body weight labeled the lower jaws of white laboratory rats for up to 6 months. Uncleaned jaws frozen for 6 months showed no degradation of fluorescence. The fluorescent mark was detectable on the jaws 1 day after rats ingested DMCT bait, and was visible in the incisors (and thus detectable without dissection) between 2 and 8 weeks after ingestion. Exposure of a DMCT oat groat bait to sunlight and moisture for 7 days did not reduce marking ability. Preliminary laboratory results indicate that DMCT labels the bones and teeth of four species of wild rodents much as it does in laboratory rats. These data suggest that DMCT in bait is a promising marker for field studies of rodents.

Davis, David E. EVALUATION OF TECHNICS FOR MEASURING MORTALITY. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 365-375, 3 figs. Oct. 1970. *WR 140: 23*
[N.C. State Univ., Raleigh.]

Denny, Richard N., and R. Bruce Gill. ANNOTATED BIBLIOGRAPHY ON MAMMAL IMMOBILIZATION WITH DRUGS. *Colo. Div. Game, Fish & Parks Spec. Rept.* no. 15. iv + 27 p. Aug. 1970. Price $1.00. *WR 140: 23*
[FAO, Nairobi, Kenya.] One hundred fifty publications are listed with a short abstract. Drug immobilization data are compiled by species in a 9-page appendix.

Dilworth, Tim G., and Joseph A. McKenzie. ATTEMPTS TO IDENTIFY MEAT OF GAME ANIMALS BY STARCH-GEL ELECTROPHORESIS. *J. Wildl. Mgmt.* 34(4): 917-921, 3 figs. Oct. 1970. *WR 140: 23*
[Univ. New Brunswick, Fredericton, Canada.] Abstract: Total protein, esterase, and lactic dehydrogenase patterns of muscle extracts from domestic cow *(Bos taurus)*, pig *(Sus scrofa)*, and sheep *(Ovis aries)*, and from moose *(Alces alces)*, deer *(Odocoileus virginianus)*, and caribou *(Rangifer tarandus)* were compared. The electrophoretic patterns were genera specific. Electrophoretic analysis shows promise as a method for identification of meat for game law enforcement.

Harthoorn, A. M., J. Kanwisher, and N. Tomkins. RADIOTELEMETRY AS A MEANS OF ASSESSING ADAPTATION TO ENVIRONMENTAL CONDITIONS. *Zool. Africana* (Cape Town) 5(1): 161-166. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 23*

Houseknecht, Clyde R. BIOTELEMETRY AS A TECHNIQUE IN DISEASE ECOLOGY STUDIES. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 414-417. Oct. 1970. *WR 140: 23*
[Univ. Minn., Minneapolis.]

Lewis, James C. WILDLIFE CENSUS METHODS: A RESUME. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6 (4): 356-364. Oct. 1970. *WR 140: 23*
[Okla. State Univ., Stillwater.]

McGinnis, Samuel M., Virginia A. Finch, and A. M. Harthoorn. A RADIOTELEMETRY TECHNIQUE FOR MONITORING TEMPERATURES FROM UNRESTRAINED UNGULATES. *J. Wildl. Mgmt.* 34(4): 921-925, 2 figs. Oct. 1970. *WR 140: 23*
[Calif. State Coll., Hayward.] Abstract: Miniature radio transmitters were used to monitor deep muscle, subcutaneous, skin surface, and hair surface temperatures in three species of unrestrained African ungulates. Deep muscle and subcutaneous transmitters were implanted through an incision in the shoulder region. Skin and hair surface transmitters were attached with silastic. Signal booster units attached to a small saddle worn by the animals provided a transmission range of about 200m.

WILDLIFE--TECHNIQUES--Continued

Östbye, Eivind. A NEW TEMPERATURE GRADIENT APPARATUS FOR USE ON TERRESTRIAL ARTHROPODS AND SMALL VERTEBRATES. *Nytt. Mag. Zool. Oslo* 18(1): 75-79, illus. 1970. [From Biol. Abstr. 51(20), 1970.] *WR 140: 24*
[Univ. Oslo, Oslo, Norway.]

Romanov, A. N. [AUTOMATIC MARKING OF WILDLIFE.] *VII Intern. Congr. Game Biol.* p. 175-179. 1967. In Russian with French summ. *WR 140: 24*
[Inst. Zhivotnogo Syr'ya & Pushniny, Kirov, USSR.]

Tester, John R. STATUS AND VALUE OF BIOTELEMETRY IN STUDIES OF VERTEBRATE ECOLOGY. *VII Intern. Congr. Game Biol.* p. 195-199. 1967. In English. *WR 140: 24*
[Univ. Minn., Minneapolis.]

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Barske, Philip. CHANGING IDEAS AND CONCEPTS OF A WILDLIFER'S RESPONSIBILITIES. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 26-28 Jan. 1970.* p. 235-244. 1970. *WR 140: 24*
[Wildl. Mgmt. Inst., Fairfield, Conn.]

Bogdanov, B. N. [ESSENTIALS OF WILDLIFE MANAGEMENT IN THE USSR.] *VII Intern. Congr. Game Biol.* p. 565-573. 1967. In Russian with French summ. *WR 140: 24*

Brüggemann, Johannes. EINFÜHRUNG IN DIE WILDBIOLOGISCHEN ARBEITEN IM INSTITUT FÜR TIERPHYSIOLOGIE DER UNIVERSITÄT MÜNCHEN. [AN INTRODUCTION TO THE WILDLIFE BIOLOGY WORK IN THE ANIMAL PHYSIOLOGY INSTITUTE OF THE UNIVERSITY OF MUNICH.] *VIII Intern. Congr. Game Biol.* p. 309-312. 1970. In German with Russian summ. *WR 140: 24*
[Univ. Munich, Munich, Germany.]

Eliseev, N. V. [INVESTIGATIONS IN WILDLIFE MANAGEMENT ON NATIONAL RESERVES OF THE USSR.] *VII Intern. Congr. Game Biol.* p. 555-558. 1967. In Russian with French summ. *WR 140: 24*

Elliott, Hugh F. I., editor. IUCN ELEVENTH TECHNICAL MEETING / PAPERS AND PROCEEDINGS / NEW DELHI, INDIA / 25-28 NOVEMBER 1969 / VOLUME I / FIRST AND SECOND SESSIONS: COMMISSION ON ECOLOGY. *IUCN Publ. New Ser.* no. 17. 282 p. 1970. In English with French summaries. "Published by and obtainable at US$5.00 per copy from IUCN, 110 Morges, Switzerland." *WR 140: 24*
Includes the following papers: *The role and economic justification of conservation in land-use planning*, M. E. D. Poore; *Some recent studies of ecological effects of montane water storage in the United Kingdom*, J. Berry; *Multipurpose use in production and protection forestry*, S. A. Hejmadi and I. M. Qureshi; *Nature conservation as a supplementary objective of protective and productive forestry*, R. D. Taber and D. R. M. Scott; *The ecological impact of pollution*, N. W. Moore; *Pesticide residues in our environment*, W. G. Appleby; *Organochlorine pollution of rivers and the heron* (Ardea cinerea *L.*), I. Prestt; *Chronic effects of herbicides derived from urea on fish and their food*, A. V. Denisova, G. V. Popova, and I. G. Pushkar; *Atmospheric pollution and its effects on natural ecosystems*, A. Mani; *Protection of wild animals in the U.S.S.R. in and out of use*, A. G. Bannikov; *Economic aspects of wildlife conservation: value of consumptive and non-consumptive uses of wildlife species*, J. J. Spillett; *Research and management needs for South-east Asian bovids*, A. de Vos; *A comparison of reproduction in tame and wild elephants*, F. Kurt; *Economic aspects of bird conservation in Taiwan*, S. R. Severinghaus; *Ecological and economic effects of birds of prey in the central region of the European part of the U.S.S.R.*, V. M. Galushin; *Birds in India's agricultural economy*, Salim Ali; *The zoo in Asia: its importance to conservation*, C. Medway; *Captive breeding*

as an aid to practical conservation, P. Wayre; *The role of zoos*, R. David; *The contribution of Delhi zoo to conservation*, K. S. Sankhala and J. H. Desai; *Conservation of oceanic islands*, E. M. Nicholson and G. L. Douglas; *The eastern Indian Ocean islands: a summary of their geography, fauna and flora*, D. W. Snow; and *The ecological impact of domestic stock on the Gir Forest*, K. T. B. Hodd.

Fog, Jørgen, and Mette Fog. COLLECTION OF DATA WITH THE ASSISTANCE OF AMATEURS. *VIII Intern. Congr. Game Biol.* p. 230-233. 1970. In English with Russian summ. *WR 140: 25*
[Game Biol. Sta., Kalø, Rønde, Denmark.]

Frank, Harry. EIGENE ERFAHRUNGEN ÜBER DIE ZUSAMMENARBEIT ZWISCHEN JÄGER UND JAGDWISSENSCHAFTLER. [SOME RESULTS OF COOPERATION BETWEEN HUNTERS AND WILDLIFE BIOLOGISTS.] *VIII Intern. Congr. Game Biol.* p. 234-236. 1970. In German with Russian summ. *WR 140: 25*
[Forschungsstelle Jagdkunde & Wildschadenverhütung, Beuel-Niederholtorf/Bonn, Germany.]

Garrett, James R. CHARACTERISTICS OF NEVADA HUNTERS. *Univ. Nev. Reno Agr. Expt. Sta.* B 22. vi + 66 p., illus. June 1970. *WR 140: 25*
Major topics of discussion include hunter characteristics, the hunting trip, hunters' attitudes, and expenditures.

Gavrin, V. F., and I. D. Kiris. [THE DEVELOPMENT OF GAME MANAGEMENT IN THE USSR.] *VII Intern. Congr. Game Biol.* p. 531-534. 1967. In Russian with French summ. *WR 140: 25*
[Inst. Zhivotnogo Syr'ya & Pushniny, Kirov, USSR.]

Gizemko, A. I. [WILDLIFE MANAGEMENT IN THE UKRAINE--HEDGEROWS.] *VII Intern. Congr. Game Biol.* p. 611-613. 1967. In Russian. *WR 140: 25*
[Inst. Zool., Kiev, USSR.] *"Gleditsia macrocantha* and *Elaeagnus angustifolia."*

Greene, Jeffrey C. CHARACTERISTICS OF SOME MICHIGAN SHOOTING PRESERVE USERS. *J. Wildl. Mgmt.* 34(4): 813-817. Oct. 1970. *WR 140: 25*
[Mich. State Univ., East Lansing.] Abstract: Characteristics of 241 users of Michigan shooting preserves were determined by a questionnaire. Most hunters visited preserves because of lack of game birds during the open season. Over half of the preserve hunters did not use preserve-owned hunting dogs. Two-thirds of the hunters lived in urban areas and they averaged 26 years of hunting experience. Compared to other hunters, preserve hunters were found to have higher incomes, more formal education, and different types of occupations. Shooting preserve users seemed satisfied with their hunting experiences.

Helminen, Matti. GAME ANIMALS UNDER THE INFLUENCE OF CULTURE IN FINLAND. *VII Intern. Congr. Game Biol.* p. 135-138. 1967. In English with Russian summ. *WR 140: 25*
[State Game Res. Inst., Helsinki, Finland.]

Henderson, John B. THE SPORTSMAN'S CONTRIBUTION TO WILDLIFE RESEARCH IN NEW ZEALAND. *VIII Intern. Congr. Game Biol.* p. 193-196. 1970. In English with Russian summ. *WR 140: 25*
[G.P.O. Box 86, Wellington, New Zealand.]

Hills, G. Angus, David V. Love, and Douglas S. Lacate. DEVELOPING A BETTER ENVIRONMENT. *Ontario Economic Council.* xi + 182 p., [33 figs.]. Aug. 1970. Price $3.00. *WR 140: 25*
[Univ. Toronto, Toronto, Ontario, Canada.] Proper care and imagination in land-use planning is vital to creating multi-purpose developed land. Planning for effective land use requires an inventory of the land, a knowledge of its

ecosystems, and an understanding of human requirements. In creating a lecture series on the assessment of basic land units, the following topics were discussed: Land-use, plant, animal, and human ecology; The classification and evaluation of land for biological and geographical production; and Planning for multiple use farm, forest, recreational, and natural areas. A study of the Simcoe Region is used to exemplify some of the procedures in land-use planning surveys.

Isaković, Ivan. GAME MANAGEMENT IN YUGOSLAVIA. *J. Wildl. Mgmt.* 34(4): 800-812, 4 figs. Oct. 1970. *WR 140: 26*

["Jelen", Belgrade, Yugoslavia.] Abstract: Game management in Yugoslavia is based on the Fundamental Law of Game Management approved by the six Republics in 1965. This law establishes that wild game is a common social possession, separates the right of the landowner from the right to hunt, and provides that Hunting Estates be established on the basis of natural habitat units regardless of land ownership. Ninety percent of the game habitat is managed by Amateur Sports Organizations, and the remaining 10% is managed under state-owned Enterprises. Prior to hunting, which is done mostly on Sunday, the sportsman must belong to a hunting organization, pass an examination, and pay a hunting fee established for each species. Membership fees ($32-$64 per year) and shooting fees are dependent on the management program being carried out by the organization and the type and trophy quality of the game being shot. Important big game species and their harvest estimates for 1967-68 are: red deer *(Cervus elaphus)* 4,042; roe deer *(Capreolus capreolus)* 20,600; chamois *(Rupicapra rupicapra)* 1,333; and brown bear *(Ursus arctos)* 145. The hare *(Lepus europaeus)* is the most important small game species harvested, with an annual kill of approximately 500,000-700,000. Four species of tetraonids are hunted together with partridge *(Perdix* and *Alectoris)* and the pheasant *(Phasianus* spp.) which is primarily produced by artificial rearing programs. Migratory waterfowl are also harvested, but acute management problems are related to international programs and policies. The maintenance of population densities of game species, as well as diversity, is being influenced by the increasing human population, decreases in the area of forested land, and changes in farming practices. Positive game management programs are being developed in order to preserve the game fauna of Yugoslavia. Merely providing protection is not adequate to insure the continued existence of game populations in the face of rapidly changing environmental conditions.

Komarek, E. V., Sr., chairman. PROCEEDINGS ANNUAL TALL TIMBERS FIRE ECOLOGY CONFERENCE, 10-11 APRIL 1969, TALLAHASSEE, FLORIDA, NUMBER 9. *Tall Timbers Res. Sta.* (Tallahassee, Fla.). 292 p., illus. 1969. *WR 140: 26*

The following papers were presented: *Comments on Controlled Burning*, Richard J. Vogl; *The Role of Fire in the Evolution of the Hawaiian Flora and Vegetation*, Richard J. Vogl; *Fire in the Tundra at Rankin Inlet N.W.T.*, G. Ross Cochrane and J. S. Rowe; *Eucalypt Ecology as Related to Fire*, A. B. Mount; *An Australian's Impression of North American Attitudes to Fire*, A. B. Mount; *Natural Reforestation in the Northern Sierra Nevada-Donner Ridge Burn*, Jane H. Bock and Carl E. Bock; *Lightning Effects on the Forest Complex*, Alan R. Taylor; *Fire and Mammals*, Charles O. Handley, Jr.; *Fire and Animal Behavior*, E. V. Komarek, Sr.; *Some Observations on Indian Forests and Prescribed Burning*, Perry E. Skarra; *Wildlife Habitat Research and Fire in the Northern Rockies*, L. Jack Lyon; *Research on Logging Slash Disposal by Fire*, Dale D. Wade; *Postulates of the Prescribed Burning Program of the Bureau of Indian Affairs*, Paul S. Truesdell; *Controlled Burning on the Fort Apache Indian Reservation, Arizona*, Harry Kallander; *Prescribed Burning on Recreation Areas in New Jersey: History, Objectives, Influence, and Technique*, James A. Cumming; and *Fire as a Physical Factor in Wildlife Management*, Robert E. Martin, Charles T. Cushwa, and Robert L. Miller.

Komarek, E. V., Sr., chairman. PROCEEDINGS TALL TIMBERS CONFERENCE ON ECOLOGICAL ANIMAL CONTROL BY HABITAT MANAGEMENT, 27-28 FEBRUARY 1969, TALLAHASSEE, FLORIDA, NUMBER 1. *Tall Timbers Res. Sta.* (Tallahassee, Fla.). v + 244 p., illus. 1969. *WR 140: 27*

The conference explores the role of habitat management in regulating animal numbers, both beneficial and detrimental, for the purpose of solving pest problems. Papers pertaining to wildlife management are listed individually in this issue.

Komarek, Roy. HABITAT MANAGEMENT FROM THE WILDLIFE MANAGEMENT VIEWPOINT. *Proc. Tall Timbers Conf. Ecol. Animal Control Habitat Mgmt.* no. 1. p. 233-238. 1969. *WR 140: 27*

[Tall Timbers Res. Sta., Tallahassee, Fla.] "Basically, wildlife management deals in regulating animal numbers both 'upward' and 'downward.' Its method is ecological manipulation, a potent constructive as well as destructive mechanism whose potentials and limitations in ecosystem management remain yet to be adequately defined. Habitat management may have its limitations as do other pest control techniques but there is ample reason to believe that it can be a very useful tool in regulating animal numbers."

Kozicky, Edward L., and John Madson. SHOOTING PRESERVE MANAGEMENT / THE NILO SYSTEM. *Winchester Western Press.* 311 p., illus., 6.5 x 9.75 in. 1966. Price $4.95. *WR 140: 27*

"Here, in thirteen concise chapters and many diagrams, is a summary of the Nilo system of shooting preserve management. It is the most complete work ever written on this important new look in American field shooting." In addition to chapters dealing with the different species managed (mallard, ring-necked pheasant, bobwhite quail and chukar partridge), there are chapters dealing with most phases of shooting preserve management: History, Types of shooting preserves, Management, Shooting preserve cover, Dogs, Promotion of shooting preserves, and Safety. The economics of shooting preserves and miscellaneous information are found in two chapters entitled: Facing the facts for profit, and Short subjects.

Kruzan, John C., and Robert J. Harding. CONTROLLED HUNTER ACCESS TO PRIVATE AGRICULTURAL LAND IN CENTRAL NEW YORK. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 199-209. 1970. *WR 140: 27*

[N.Y. Conserv. Dept., Cortland.]

Kujundžić-Popović, Zora, and Slobodan Stajić. PROTECTION DU GIBIER COMME ESPÈCES ORGANIQUES PAR LES REGLEMENTS DU DOMAINE DE LA CHASSE ET DE LA PROTECTION DE LA NATURE ET LEURS RAPPORTS MUTUELS. [PROTECTION OF GAME BY HUNTING REGULATIONS AND NATURE PROTECTION AND THE (RESULTING) INTERRELATIONSHIPS.] *VII Intern. Congr. Game Biol.* p. 509-516, illus. 1967. In French with Russian summ. *WR 140: 27*

[Inst. Protection Nat., Belgrade, Yugoslavia.]

Lampio, Teppo. METSÄSTÄJIEN IKÄ KIURUVEDELLÄ. [AGE OF HUNTERS IN KIURUVESI, CENTRAL FINLAND.] *Suomen Riista* 22: 46-53, 4 figs. 1970. In Finnish with English summ. *WR 140: 27*

Leedy, Daniel L. MAN'S STAKE IN A GOOD ENVIRONMENT / AN APPRAISAL OF THE PROGRAM OF THE 35TH NORTH AMERICAN WILDLIFE AND NATURAL RESOURCES CONFERENCE, WITH COMMENTS ON SIGNIFICANT TRENDS AND PROBABLE DEVELOPMENTS. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 428-442. 1970. *WR 140: 27*

[Office Water Resources Res., USDI, Washington, D.C.]

Matthews, G. V. T. THE USE OF AMATEUR WORKERS IN BRITISH STUDIES OF BIRD POPULATIONS. *VIII Intern. Congr. Game Biol.* p. 197-201. 1970. In English with Russian summ. *WR 140: 27*

[Wildfowl Trust, Slimbridge, England.]

McCabe, Robert A. CONTRIBUTIONS OF LAYMEN TO NORTH AMERICAN WILDLIFE RESEARCH. *VIII Intern. Congr. Game Biol.* p. 202-224, 12 figs. 1970. In English with Russian summ. *WR 140: 28*
[Univ. Wis., Madison.]

Mohler, Levi L. THE INCREASE IN HUNTING OPPORTUNITY. *Idaho Wildl. Rev.* 23 (2): 3-7, [6 figs.]. Sept.-Oct. 1970. *WR 140: 28*
[Idaho Fish & Game Dept., Boise.] Opportunities for hunting have increased steadily since 1910. New upland game, waterfowl, and big game species contribute to hunting variety.

Müller-Using, D. ZUR SOZIOLOGIE DER JÄGER. [ON THE SOCIOLOGY OF HUNTERS.] *VII Intern. Congr. Game Biol.* p. 525-529. 1967. In German with Russian summ. *WR 140: 28*
[Inst. Jagdkunde, Hannover, Münden, Germany.]

Müller-Using, Detlev. JÄGERBEOBACHTUNGEN UND WILDETHOLOGIE. [HUNTER OBSERVATIONS AND GAME ETHOLOGY.] *VIII Intern. Congr. Game Biol.* p. 241-246. 1970. In German with Russian summ. *WR 140: 28*
[Inst. Jagdkunde, Hannover, Münden, Germany.]

Naumov, N. P. [SOME PROBLEMS OF POPULATION BIOLOGY AND WILDLIFE MANAGEMENT.] *VII Intern. Congr. Game Biol.* p. 559-564. 1967. In Russian with French summ. *WR 140: 28*
[Moscow State Univ., Moscow, USSR.]

Oberst, Raymond G. MANAGEMENT OF WILDLIFE RESOURCES FOR NONCONSUMPTIVE USES. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 229-234. 1970. *WR 140: 28*
[Bur. Sport Fisheries & Wildl., Boston, Mass.] Nonconsumptive user = bird watcher, picnicker, hiker, photographer, and camper.

O'Gorman, Fergus. THE DEVELOPMENT OF GAME IN IRELAND. *VIII Intern. Congr. Game Biol.* p. 387-396, 1 fig. 1970. In English with Russian summ. *WR 140: 28*
[Univ. Coll., Cork, Ireland.]

Popović, Jelena. AMÉNAGEMENT DE L'ABONDANCE DE CERTAINES ESPÈCES DE LA FAUNE EN DIFFÉRENTES COMMUNAUTÉS BIOLOGIQUES. [MANAGEMENT OF ABUNDANCE OF VARIOUS SPECIES OF THE HUNTING AND NONHUNTING FAUNA WITHIN DIFFERENT LIVING COMMUNITIES.] *VII Intern. Congr. Game Biol.* p. 519-524. 1967. In French with English summ. *WR 140: 28*

Priklonski, S. G. [USING AMATEUR HUNTERS TO ESTIMATE NUMBERS OF GAME. EXPERIMENTS OF THE OKA RESERVATION.] *VIII Intern. Congr. Game Biol.* p. 225-229. 1970. In Russian with English summ. *WR 140: 28*

Reydellet, Maurice. COOPERATION ENTRE CHASSEURS ET BIOLOGISTES DU GIBIER AU SEIN DU CONSEIL INTERNATIONAL DE LA CHASSE (C.I.C.). [COOPERATION BETWEEN HUNTERS AND WILDLIFE BIOLOGISTS WITHIN THE INTERNATIONAL COUNCIL OF HUNTING.] *VIII Intern. Congr. Game Biol.* p. 253-254. 1970. In French with Russian summ. *WR 140: 28*
[35 Rue Carnot, Gap, France.]

Riney, T. CONSERVATION AND MANAGEMENT OF AFRICAN WILDLIFE. *FAO United Nations* (Rome). iii + 35 p., 1 fig. 1967. *WR 140: 28*
Results and conclusions of the findings of the FAO-IUCN African Special Project study are given, taking a look at the developmental programs for wildlife and habitat management. The potential in the conservation and development of the wildlife capital is evaluated. The countries of Botswana, Burundi, Cameroon, Central African Republic, Chad, Congo (Brazzaville), Dahomey, Ethiopia, Kenya, Malawi, Mali, Nigeria, Senegal, Sierra Leone, Somalia, Tanzania, Upper Volta, and Zambia were visited.

Riney, Thane. HOW EUROPEAN BIOLOGISTS CAN CONTRIBUTE TO AN INTERNATIONAL UNDERSTANDING OF LARGE MAMMALS. *VIII Intern. Congr. Game Biol.* p. 349-354. 1970. In English with Russian summ. *WR 140: 29*
[FAO, Rome, Italy.]

Ryel, L. A., G. C. Jamsen, and L. J. Hawn. SOME FACTS ABOUT MICHIGAN HUNTERS. *Mich. Dept. Nat. Resources Res. & Development Rept.* no. 197. 25 p., 2 figs. 9 Apr. 1970. *WR 140: 29*
[Mich. Dept. Conserv., Lansing.] Data compiled from the past 20 years on hunter numbers, ages, relationship in terms of numbers with the growing population, license buying habits, frequency of hunting, occupation, and sex are given in tables.

Siriez, Henri. GIBIER AMÉRICAIN ET CHASSEURS SOVIÉTIQUES. [AMERICAN GAME AND SOVIET HUNTERS.] *Phytoma* 210: 37-38, illus. 1969. [From Biol. Abstr. 51 (16), 1970. In French.] *WR 140: 29*

Stanojević, Tihomir. WHERE IS THE LIMIT BETWEEN THE RIGHT OF MAN TO THE GAME AND THE RIGHT OF THE GAME TO EXIST? *VII Intern. Congr. Game Biol.* p. 503-508. 1967. In English with Russian summ. *WR 140: 29*

Thompson, H. THE EFFECTS ON WILDLIFE OF CHEMICAL PRODUCTS AND LAND USE TECHNIQUES. *VII Intern. Congr. Game Biol.* p. 325-327. 1967. In English with Russian summ. *WR 140: 29*
[Infestation Control Lab., Field Res. Sta., Guildford, Surrey, England.]

Uspenskii, S. M. [PROBLEMS IN THE UTILIZATION AND PROTECTION OF WILDLIFE IN THE SOVIET.] *VII Intern. Congr. Game Biol.* p. 599-603. 1967. In Russian with French summ. *WR 140: 29*
[Moscow State Univ., Moscow, USSR.]

Zásměta, Vitězslav. FACHAUSBILDUNG DER JÄGER IN DER TSCHECHOSLOWAKEI UND IHRE HILFE BEI DER LÖSUNG DER FORSCHUNGSAUFGABEN. [PROFESSIONAL TRAINING OF HUNTERS IN CZECHOSLOVAKIA AND THE LATTER'S HELP IN THE SOLUTION OF RESEARCH PROBLEMS.] *VIII Intern. Congr. Game Biol.* p. 250-252. 1970. In German with Russian summ. *WR 140: 29*
[Lesnická ul., Brno, Czechoslovakia.]

WILDLIFE--HUNTING AREAS & PROBLEMS

Pribić, L. [METHODOLOGY OF ORGANIZING GAME MANAGEMENT AREAS.] *VII Intern. Congr. Game Biol.* p. 589-597. 1967. In Russian with French summ. *WR 140: 29*

WILDLIFE--INTRODUCTIONS

Banks, Richard C. BIRDS IMPORTED INTO THE UNITED STATES IN 1968. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 136. ii + 64 p. Sept. 1970. *WR 140: 29*
Abstract: Foreign wildlife imported into the United States must be reported on standard B.S.F.W. Form 3-177, filed with U. S. Customs. In 1968, more than 10,000 forms were filed, reporting more than 490,000 individual birds. This list gives the number of each species of bird that was imported in that year, as tallied from the declarations.

Izmailov, I. V. [SOME QUESTIONS OF THE TRANSFORMATION OF THE FAUNA OF BURYATIYA.] *Uch. Zap. Buryat Gos. Pedagog. Inst.* 31: 3-17. 1969. [From Biol. Abstr. 51(22), 1970, from Referat. Zhur., Biol., 1970, no. 3I661. In Russian.] *WR 140: 29*
Attempts to acclimatize the North American mink, the raccoon dog, and the European hare were unsuccessful. Only sable and muskrat gave favorable results.

Simeonov, S., and W. Penkov. [ORNITHOCENOLOGICAL STUDIES OF AN ARTIFICIAL PLANTATION OF AN "ISLAND" TYPE.] *God. Sofiiskiya Univ. Biol. Fak. Kn. 1 Zool. Fiziol. Biokhim. Zhivotn.* 62: 11-22. 1967/1968. [From Biol. Abstr. 51(22), 1970. In Russian with German summ.] *WR 140: 30*
[Sofia Univ., Sofia, Bulgaria.]

WILDLIFE--ECONOMIC & OTHER VALUES

Petrov, Petar. [RESULTS OF THE SO FAR CONDUCTED STUDIES ON THE DAMAGES CAUSED BY GAME IN BULGARIA.] *VII Intern. Congr. Game Biol.* p. 419-421, 1 fig. 1967. In Russian with English summ. *WR 140: 30*
[Inst. Lesa, Sofia, Bulgaria.]

Wachiira, Robin Kamoji. THE ROLE OF FORESTS, FISHERIES, AND WILDLIFE IN KENYA'S ECONOMIC FUTURE. *M.S. thesis, Univ. Wash.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 30*

Walen, J. P. Jannette. WILD ALS VLEESBRON IN AFRIKA. [GAME AS A SOURCE OF MEAT IN AFRICA.] *Landbouwkundig Tijdschr.* 80(2): 46-51, 7 figs. Feb. 1968. In Dutch. *WR 140: 30*

WILDLIFE--FOOD HABITS & TECHNIQUES

Bailey, James A., and Julius G. Nagy, editors. RECENT ADVANCES IN WILDLIFE NUTRITION. *Colo. State Univ.* 177 p. Fall 1969. Price $2.00. *WR 140: 30*
[Colo. State Univ., Ft. Collins.] The following papers from a graduate seminar in wildlife biology are included: *Nutrient composition of juniper in relation to twig form and length*, J. Edward Kautz; *Components of natural diets that may inhibit rumen function*, J. R. Adams; *Effects of fertilizers on the nutritional quality of wildlife foods--a literature review*, Gary L. Williams; *Food habits of pronghorn antelope*, John P. Hoover; *Elk food habits and nutrition*, Robin H. Fields; *Review of food-habit and forage evaluation techniques for deer*, Wayne Regelin; *A partial review of literature on selective feeding tendencies by grouse, family Tetraonidae*, Terry A. May; *Nutritional comparisons: mule deer and other ruminants*, John C. Olson; *Lagomorph digestion--a comparison with ruminants*, Richard Dolbeer; In vitro *rumen fermentation techniques and their relation to rumen function*, Charles C. Schwartz; *Some rumen microorganisms in wild ruminants*, W. W. Paintner; *Predominant rumen microorganisms and some microbial aspects of rumen function*, T. A. Barber; *Rumino-reticular contents and blood constituents as parameters of nutritional condition in North American deer*, James A. Bailey; *Deer starvation*, Gene G. Schoonveld; *Effect of diet on avian excreta*, Thomas M. Pojar; *Zinc metabolism in mallard ducks*, Richard Curnow; and *Energy flux and water kinetics in pronghorn antelope*, D. E. Wesley.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Cooper, A. B. GOLDEN EAGLE KILLS RED DEER CALF. *J. Zool.* 158(2): 215-216. 1969. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 30*

Radwan, M. A., G. L. Crouch, and W. D. Ellis. IMPREGNATING AND COATING WITH ENDRIN TO PROTECT DOUGLAS-FIR SEED FROM RODENTS. *U.S. Forest Serv. Res. Pap.* PNW-94. 17 p., illus. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 30*
[Pacific Northwest Forest & Range Expt. Sta., Portland, Oreg.]

Zásmeta, Vitezslav. DAMAGES IN AGRICULTURAL AND FOREST MANAGEMENT CAUSED BY GAME. *VII Intern. Congr. Game Biol.* p. 409-413. 1967. In English with Russian summ. *WR 140: 30*
[Forestry Acad., Brno, Czechoslovakia.]

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Arizona. ANNUAL REPORT ISSUE JULY 1, 1968 - JUNE 30, 1969. [*Ariz.*] *Wildl. Views* 17(1): 1-85, illus. Jan.-Feb. 1970. *WR 140: 31*
With a section on the history of game management through the past 40 years, including big game, deer, elk, and small game.

Bureau of Sport Fisheries & Wildlife. FEDERAL AID IN FISH AND WILDLIFE RESTORATION 1969. *Wildl. Mgmt. Inst.* and *Sport Fishing Inst.* iv + 103 p., illus. 1970. *WR 140: 31*
Annual report on Dingell-Johnson and Pittman-Robertson programs for the fiscal year ending 30 June 1969.

Coles, Charles, director. THE GAME CONSERVANCY / ANNUAL REVIEW 1969/70. *Game Conservancy.* 93 p., illus. 1970. Price 7s. 6d. *WR 140: 31*
Report includes summaries of research programs being carried out. Some topics of study are: the acclimatization of reared gamebirds, both pheasants and partridges; studies of separate wild and managed pheasant populations; and investigation of the causes of low chick survival of wild partridges on a large modern farm.

Curry-Lindahl, Kai. REPORT TO THE GOVERNMENT OF LIBERIA ON CONSERVATION, MANAGEMENT AND UTILIZATION OF WILDLIFE RESOURCES. *IUCN Publ. New Ser., Suppl. Pap.* no. 24. 31 p. 1969. *WR 140: 31*
The report includes a review of land use, wildlife status, present conservation practices, and an outline for a wildlife restoration plan.

Jones, Jerry G., chairman. LOUISIANA WILD LIFE AND FISHERIES COMMISSION / 13TH BIENNIAL REPORT 1968/1969. *La. Wild Life & Fisheries Comm.* vi + 156 p., illus. May 1970. *WR 140: 31*
The 15-page game section includes information on predator control, use of electronic data processing in the analysis of several programs, dove research and hunting survey, waterfowl inventories and hunting seasons, wood duck roost count study, exotic game bird study, deer research (with 3 pages of tables of deer weights, hunter success ratios, deer herd production ratios, and deer kill mail survey results), wild turkey transplants, squirrels, rabbits, black bear, and game management areas.

Maguire, H. F. SMALL GAME TAKE DOWN LAST YEAR. [*N.Y.*] *Conservationist* 25 (3): 32-33, 2 figs. Dec.-Jan. 1970-71. *WR 140: 31*
[N.Y. Dept. Environmental Conserv., Albany.] Duck, goose, and woodcock take increased; other game species received light hunting pressure and total harvest was low. Bad weather discouraged more than one-third of the licensed hunters from going afield.

Mellanby, K., director. MONKS WOOD EXPERIMENTAL STATION / REPORT FOR 1966-1968. *Nature Conservancy.* 88 p., 1 fig. 1969. *WR 140: 31*
Includes reports from the following divisions: toxic chemicals and wildlife, lowland grassland and grass heath, woodland management, biological records center, director's laboratory, and geographical sciences branch.

Missouri. ANNUAL REPORT 1968-1969. *Mo. Dept. Conserv.* iv + 236 p. 1969. *WR 140: 31*
A summary of the activities and business of the Department of Conservation during the fiscal year 1 July 1968 to 30 June 1969.

New Jersey. ANNUAL REPORT OF THE DIVISION OF FISH AND GAME. *N.J. Dept. Conserv. & Econ. Development.* 52 p., illus. 1969. *WR 140: 31*
For the fiscal year 1 July 1968 - 30 June 1969, with a section on wildlife management.

N. Dak. Game Management Division. GAME MANAGEMENT DIVISION / SURVEYS AND INVESTIGATIONS PROJECT. *N. Dak. Outdoors* 32(7): 10-28, illus. Jan. 1970. *WR 140: 32*

An annual progress report of surveys and investigations held during 1 July 1968 - 30 June 1969 on upland game, waterfowl, disease studies, furbearers, big game, and habitat development.

Smith, William M. THE GAME BAGS / AN ESTIMATE OF THE WILDLIFE HARVEST IN NEW JERSEY DURING 1969-1970. *N.J. Outdoors* 21(2): 3-13, illus. Nov. 1970. *WR 140: 32*

Estimates of the harvests of 10 small game species during the 1969-70 hunting season in New Jersey were obtained from responses to questionnaires mailed to resident and non-resident firearm hunters. Included are data on rabbits, pheasant, squirrels, quail, grouse, woodcock, ducks, Canada geese, brant and clapper rail.

South Dakota. SOUTH DAKOTA CONSERVATION DIGEST / ANNUAL REPORT. *S. Dak. Conserv. Digest* 36(6): 1-36, illus. Nov.-Dec. 1969. *WR 140: 32*

With a section on game management.

Strandgaard, H. FLUCTUATIONS AND TRENDS IN DANISH BAG RECORDS. *VII Intern. Congr. Game Biol.* p. 575-584, 13 figs. 1967. In English. *WR 140: 32*

[Game Biol. Sta., Kalo, Denmark.]

Sutton, Graham, chairman. NATURAL ENVIRONMENT RESEARCH COUNCIL / REPORT OF THE COUNCIL FOR THE PERIOD 1 APRIL 1967 - 31 MARCH 1968. *Her Majesty's Stationery Office* (London, England). vii + 122 p. + 8 pls. 25 July 1968. *WR 140: 32*

Includes reports from the 13 research establishments.

Vermont Fish & Game Department. VERMONT'S 1968 BIG GAME AND WATERFOWL SEASONS IN REVIEW. *Vt. Fish & Game Dept. Bull.* 69. 44 p., 6 figs. 1969. *WR 140: 32*

With sections on the bow season, the buck season, the bear season, and the waterfowl season.

Vermont Fish & Game Department. VERMONT'S GAME ANNUAL / A REVIEW AND FORECAST. *Vt. Fish & Game Dept. Bull.* 70-1. iv + 38 p., illus. 1970. *WR 140: 32*

Results of the 1969 bow, buck, antlerless, bear, and waterfowl seasons in Vermont are given. Progress on re-introducing the wild turkey to the state is discussed.

Wynne-Edwards, V. C., chairman. NATURAL ENVIRONMENT RESEARCH COUNCIL / REPORT OF THE COUNCIL FOR THE PERIOD 1 APRIL 1968 - 31 MARCH 1969. *Her Majesty's Stationery Office* (London, England). vii + 106 p. + 8 pls. 24 July 1969. *WR 140: 32*

Includes reports from the 14 research establishments.

Wynne-Edwards, V. C., chairman. NATURAL ENVIRONMENT RESEARCH COUNCIL / REPORT OF THE COUNCIL FOR THE PERIOD 1 APRIL 1969 - 31 MARCH 1970. *Her Majesty's Stationery Office* (London, England). vii + 107 p. + 8 pls. 23 July 1970. Price 13s. *WR 140: 32*

Reports from 18 affiliated research establishments are included.

Zambia. DEPARTMENT OF GAME AND FISHERIES ANNUAL REPORT FOR THE YEAR 1968. *Republic Zambia Ministry Nat. Resources & Tourism.* ii + 64 p., [11] figs. 1970. Price 35 ngwee. *WR 140: 32*

Wildlife in Zambia is being considered as a meat production source to supplement the national beef herd. Studies of wildlife resources include feeding studies of eland, status of wildlife in Zambia, domestication of eland and lechwe, reproductive physiology and life history of the Luangwa elephant population, and effectiveness of game cropping. Specific figures are given in 13 p. of tables and graphs.

XUM

Anderson, William. A PRELIMINARY STUDY OF THE RELATIONSHIP OF SALTPONDS AND WILDLIFE--SOUTH SAN FRANCISCO BAY. *Calif. Fish & Game* 56(4): 240-252, 1 fig. Oct. 1970. *WR 140: 33*

Abstract: Five salt evaporation ponds in Alameda County were evaluated as wildlife habitat. Data were collected from September 1967 to September 1969. Salinity ranged from 9 Sal. (percent of saturation) as the minimal in Pond 1 to a maximum of 93 Sal. in Pond 6. Fifty-five bird species were recorded in the ponds. Among the birds making heavy use of salt ponds were shorebirds, ducks, grebes and Bonaparte's gulls *(Larus philadelphia)*. Dabbling ducks, coots and fish-eating birds exhibited a marked preference for Pond 1. Diving ducks, grebes, phalaropes and Bonaparte's gulls disclosed a high degree of salinity tolerance and a predilection for food items existing in ponds of high salinity. Shorebirds, except phalaropes, made heaviest use of ponds almost regardless of salinity and which were sufficiently shallow for wading.

Harrison, Jeffery. CREATING A WETLAND HABITAT. *Bird Study* 17(2): 111-122 + 4 pls. June 1970. *WR 140: 33*

["Merriewood", Sevenoaks, Kent, England.] Territorial requirements, artificial islands and spits, loafing spots, and planting programs are mentioned as some of the considerations in reclaiming sand, gravel, and clay pits for waterfowl habitat. In 13 seasons the wildfowl population has increased by 500% in the areas described.

Hoffman, Ronald H. WATERFOWL UTILIZATION OF PONDS BLASTED AT DELTA, MANITOBA. *J. Wildl. Mgmt.* 34(3): 586-593, 2 figs. July 1970. *WR 140: 33*

[Stockbridge High School, Stockbridge, Mich.] Abstract: Waterfowl use of 25 ponds blasted in Manitoba's Delta Marsh was studied from 1965-66. Greatest use of the ponds occurred during spring and early summer. In comparison to surrounding wetlands, there were greater fluctuations in annual abundance, less species diversity, and more breeding pairs per unit of shoreline on the ponds. Ducks stayed on the ponds a mean of 15.6 minutes per visit; 86% of their time was spent on elevated spoil. Blue-winged teal *(Anas discors)* comprised 56% of the waterfowl counted. These ponds seemingly functioned as isolation and loafing areas for breeding pairs of dabbling ducks.

Krull, John N. AQUATIC PLANT-MACROINVERTEBRATE ASSOCIATIONS AND WATERFOWL. *J. Wildl. Mgmt.* 34(4): 707-718. Oct. 1970. *WR 140: 33*

[Southern Ill. Univ., Carbondale.] An ecological study was conducted to determine the association of macroinvertebrates with 12 spp. of submerged aquatic plants common in central New York. The abundance and kind of animals associated with each plant species and with their substrates were determined. Hydrophytes believed to be poor waterfowl food plants almost assuredly are indirectly important to waterfowl production, because they harbor large quantities of macroinvertebrates which furnish a source of animal protein.--From abstr.

Mall, Rolf E. SOIL-WATER-SALT RELATIONSHIPS OF WATERFOWL FOOD PLANTS IN THE SUISUN MARSH OF CALIFORNIA. *Calif. Dept. Fish & Game, Wildl. Bull.* no. 1. 59 p., 24 figs. 1969. *WR 140: 33*

[Calif. Dept. Fish & Game, Sacramento.] Plant use and selection by waterfowl, the marsh environment, and the impact of habitat degradation on waterfowl resources are discussed. Availability and productivity of alkali bulrush, the most used food plant of waterfowl wintering in the Suisun March, is limited by its growing season, submergence requirements and response to salinity during May.--From summ.

Mayer, F. L., Jr., and J. B. Low. THE EFFECT OF SALINITY ON WIDGEONGRASS. *J. Wildl. Mgmt.* 34(3): 658-661. July 1970. *WR 140: 33*

[Bur. Sport Fisheries & Wildl., Fish Pesticide Res. Lab., Columbia, Mo.] Abstract: The effects of salinity on widgeongrass *(Ruppia maritima)* were studied in a greenhouse. Production of all age groups of plants tested, and seed germination was greatest in fresh water. Plants of all ages grown in salinities up

to 12,000 ppm produced seeds, but seed numbers were few at the highest levels. Six-weeks-old plants could tolerate a salinity of 27,000 ppm, but 8- and 12-week-old plants could not tolerate salinities above approximately 21,000 ppm. Only during the first few weeks of treatment could mature plants tolerate salinity better than young plants.

Patton, David R., and B. Ira Judd. THE ROLE OF WET MEADOWS AS WILDLIFE HABITAT IN THE SOUTHWEST. *J. Range Mgmt.* 23(4): 272-275, 2 figs. July 1970. *WR 140: 34*
[Ariz. State Univ., Tempe.] Deer and elk use was found to be higher in the forest edge, but the time spent in the wet meadow and transition may be more important because of the quantity and quality of forage available. Turkey and duck utilize the meadow for food and resting areas.--From highlight.

Provost, Maurice W. ECOLOGICAL CONTROL OF SALT MARSH MOSQUITOES WITH SIDE BENEFITS TO BIRDS. *Proc. Tall Timbers Conf. Ecol. Animal Control Habitat Mgmt.* no. 1. p. 193-206, 9 figs. 1969. *WR 140: 34*
[Fla. State Board Health, Vero Beach.] Mosquitoes may be controlled through impounding and flooding marshes without destroying valuable bird habitat.

Sanderson, Glen C., and Frank C. Bellrose. WILDLIFE HABITAT MANAGEMENT OF WETLANDS. *An. Acad. Brasileria Cienc.* 41(suppl.): 153-204, 1 fig. 1969. In English with Portuguese summ. *WR 140: 34*
[Ill. Nat. Hist. Surv., Urbana.] Distribution, abundance and ecological characteristics of wetlands in North America are discussed. Management techniques by water, vegetation and animal controls are explained. Work by federal, state, provincial, local, and private agencies on saving wetlands is reported. Future planning through buying and restoration programs is also considered.

Sloan, Charles E. BIOTIC AND HYDROLOGIC VARIABLES IN PRAIRIE POTHOLES IN NORTH DAKOTA. *J. Range Mgmt.* 23(4): 260-263, 3 figs. July 1970. *WR 140: 34*
[U.S. Geological Survey, Denver, Colo.] Differences in climate, geology, topography, ground-water hydrology, and land use create wide variations in pothole hydrology. Plants in and adjacent to potholes are useful indicators of water permanence, depth, and salinity--variables that are important in wetland management.--From highlight.

Smith, Edward Ray. EVALUATION OF A LEVEED LOUISIANA MARSH. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 265-275. 1970. *WR 140: 34*
[SCS, Alexandria, La.]

Szijj, Josef, and Karel Hudec. PROGRAMM ZUR ERFORSCHUNG UND GESTALTUNG DER PALÄARKTISCHEN WASSERWILDBIOTOPE. [PROGRAM FOR THE INVESTIGATION AND DEVELOPMENT OF PALEARCTIC AQUATIC WILDLIFE HABITATS.] *VIII Intern. Congr. Game Biol.* p. 59-67. 1970. In German with Russian summ. *WR 140: 34*

Whitesell, Dale E. WETLANDS PRESERVATION-MANAGEMENT IN NORTH AMERICA. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 327-335. 1970. *WR 140: 34*
[Ducks Unlimited, Inc., Chicago, Ill.]

FARMLAND & WILDLIFE

Čop, Janez, and Alojz Černe. THE INFLUENCE OF CHANGES IN AGRICULTURAL PRODUCTION ON SMALL GAME. *VII Intern. Congr. Game Biol.* p. 329-334, 3 figs. 1967. In English. *WR 140: 34*
[Inst. Gozdno Lesno Gospodarstvo, Ljubljana, Yugoslavia.]

Grafton, Roger N. WILD LIFE OUTSIDE OUR GAME RESERVES. *African Wildl.* 22 (4): 301-304, illus. 1968. [From Biol. Abstr. 51(15), 1970.] *WR 140: 34*
The average South African farm could support considerable wildlife with proper management.

FARMLAND & WILDLIFE--Continued

Siriez, Henri. CHASSE ET AGRICULTURE: AUGMENTATION DU NOMBRE DES CHASSEURS, DIMINUTION DES TERRES CULTIVÉES. [HUNTING AND AGRICULTURE: AN INCREASE IN THE NUMBER OF HUNTERS, A DECREASE IN CULTIVATED LAND.] *Phytoma* 210: 23-31, illus. 1969. [From Biol. Abstr. 51(16), 1970. In French.] *WR 140: 35*

Voronova, L. D. [CHEMISTRY IN AGRICULTURE AND WILDLIFE.] *VII Intern. Congr. Game Biol.* p. 279-284. 1967. In Russian with French summ. *WR 140: 35*

RANGELAND & WILDLIFE

Bayoumi, Mohamed Abbas. UTILIZATION OF FORAGE BY SHEEP ON A BIG-GAME WINTER RANGE. *M.S. thesis, Utah State Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968 - JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 35*

Scheldt, Robert Steve. ECOLOGY AND UTILIZATION OF MOUNTAIN MAHOGANY IN IDAHO. *M.S. thesis, Univ. Idaho.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968 - JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 35*

Westhoff, V. DE INVLOED VAN HET WILD OP DE VEGETATIE. [THE IMPACT OF A GAME STOCK ON VEGETATION.] *Nederlandsch Boschbouw Tijdschr.* 39(5): 218-232. 1967. In Dutch with English summ. *WR 140: 35*

The effect of red deer, roe deer, boar, ground squirrels, and rabbits on vegetation. European, American and New Zealand examples are discussed.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Cushwa, Charles T., Eugene Czuhai, Robert W. Cooper, and William H. Julian. BURNING CLEARCUT OPENINGS IN LOBLOLLY PINE TO IMPROVE WILDLIFE HABITAT. *Ga. Forest Res. Pap.* 61. p. 1-5, illus. 1969. [From Biol. Abstr. 51(18), 1970.] *WR 140: 35*

[North Central Forest Expt. Sta., St. Paul, Minn.]

Eiberle, K. WALDKUNDLICHES ZUR WILDSCHADENFRAGE. [CONSIDERATIONS ON THE PROBLEM OF SYLVICULTURAL DAMAGE CAUSED BY GAME.] *Schweiz. Z. Forstw.* 120(11): 595-609. 1969. [From Biol. Abstr. 51(18), 1970. In German with French and English summ.] *WR 140: 35*

[Inst. Waldbau, ETH, Zurich, Switzerland.]

Formozov, A. N. [THE FOREST IS REPLETE WITH STORAGE.] *Priroda* 1969(10): 120-125. 1969. [From Bird-Banding 41(3), 1970. In Russian.] *WR 140: 35*

Food storage habits of palearctic forest birds and mammals.

Henry, Vernon G. RELATION OF BROWSE PRODUCTION TO SITE FACTORS AND HUNTER USE AND HARVEST ON THE PENNSYLVANIA STATE UNIVERSITY EXPERIMENTAL FOREST. *M.S. thesis, Pa. State Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968 - JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 35*

Jordan, James S. FOREST HABITAT MANAGEMENT FOR NONCONSUMPTIVE USES OF WILDLIFE. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 89-96. 1970. *WR 140: 35*

[NE Forest Expt. Sta., Warren, Pa.]

Kirkland, Gordon Laidlaw, Jr. AVIAN UTILIZATION OF SMALL WOODLOTS IN SOUTHEASTERN MICHIGAN. *Ph.D. thesis, Mich. State Univ.* 212 p. 1969. [From Dissertation Abstr. Intern. 30(11B), 1970.] *WR 140: 36*

Three woodlots of varying forest types were studied. Data were collected on the species present, numbers of individuals, conspicuous activities, and behavior. The similarities in species composition of the woodlots indicated there are factors which promote the presence of the same species in more than one woodlot. Possible influencing factors include the amount of water, presence of conifers, openings, grassy areas, proximity of urban centers, and the number of dead trees.

Murphy, Dean A., and Hewlette S. Crawford. WILDLIFE FOODS AND UNDERSTORY VEGETATION IN MISSOURI'S NATIONAL FORESTS. *Mo. Dept. Conserv., Tech. Bull.* no. 4. vii + 47 p., 12 figs. 1970. *WR 140: 36*

[Mo. Dept. Conserv., Jefferson City.] Major topics of discussion are description of study area, survey procedures, characteristics of forest types, total vegetative production, preferred deer and turkey foods, fruit producing trees and shrubs, carrying capacity for deer, and effects of timber harvest and stand improvement.

Reynolds, Hudson G., Warren P. Clary, and Peter F. Ffolliott. GAMBEL OAK FOR SOUTHWESTERN WILDLIFE. *J. Forestry* 68(9): 545-547, 2 figs. Sept. 1970. *WR 140: 36*

[Rocky Mountain Forest & Range Expt. Sta., Tempe, Ariz.] Abstract: Browse, mast, and cover produced by Gambel oak *(Quercus gambelii* Nutt.*)* over wide areas in the Southwest contribute substantially to wildlife sustenance. Gambel oak should and can be maintained in multiple-use ponderosa pine forests by management compromises with timber, water, and livestock interests.

Seymour, William. DAMAGE BY GAME TO FOREST CROPS. *VII Intern. Congr. Game Biol.* p. 405-408. 1967. In English with French summ. *WR 140: 36*

[Falconers' House, Wimborne, Dorset, England.]

[Shaw, Samuel P.] MANAGING WOODLANDS FOR WILDLIFE. *USDA--Forest Serv., Northeastern Area State & Private Forestry.* 16 p., illus. 1970. *WR 140: 36*

[Upper Darby, Pa.] The programs discussed here apply only to hardwood (broadleaf) forest types found in the 20 states (cornered by Minn., Maine, Mo., and Md.). The most important are oak-hickory, maple-beech-birch, aspen-birch, and elm-ash-cottonwood. These types total 121 million acres, or 78% of all commercial forest land in the defined area.

Szukiel, Eleonora. WYNIKIDOSWIADCZEN NAD CHEMICZNQ OCHRONQ UPRAW I MLODNIKOW PRZED ZWIERZNQ. [RESULTS OF EXPERIMENTS ON THE CHEMICAL PROTECTION OF YOUNG PLANTATIONS AND THICKETS AGAINST GAME.] *Sylwan* 113(3): 49-55. 1969. [From Biol. Abstr. 51(15), 1970. In Polish with Russian and English summ.] *WR 140: 36*

Turček, F. J. SOME BENEFICIAL EFFECTS OF WILDLIFE TO FOREST. *VII Intern. Congr. Game Biol.* p. 629-633. 1967. In English with French summ. *WR 140: 36*

[Slovak Acad. Sci., Banská Štiavnica, Czechoslovakia.]

Wallmo, O. C. RESPONSE OF DEER TO ALTERNATE-STRIP CLEARCUTTING OF LODGEPOLE PINE AND SPRUCE-FIR TIMBER IN COLORADO. *USDA Forest Serv. Res. Note RM* no. 141. 4 p., 3 figs. 1969. *WR 140: 36*

[Rocky Mt. Forest & Range Expt. Sta., Fort Collins, Colo.] Abstract: Pellet-group counts indicated that in Colorado clearcutting lodgepole pine and spruce-fir forest in strips 1, 2, 3, and 6 chains wide, with alternating uncut strips of the same widths, doubled the use by mule deer 10 years after logging. The increase in use was in the cut strips, where mean pellet-group densities were three times those on uncut strips and on adjacent virgin forest.

Yancey, Richard K. THE VANISHING DELTA HARDWOODS AND THEIR WILDLIFE RESOURCES. *La. Wild Life & Fisheries Comm.* 18 p. 1969. *WR 140: 37*
[La. Wild Life & Fisheries Comm., Baton Rouge.] A comparison is given between the carrying capacity and hunter harvest of species of deer, squirrel, turkey, swamp rabbit and waterfowl in northern Louisiana bottomlands as they were in 1968, as they would have been in 1968 if all the hardwoods had remained, and the proposed carrying capacity for 1985. Changes in population numbers, with such dramatic decreases as 90% of squirrel hunter recreation time, show the need for further management practices. A program for land acquisition and management is included.

MAMMALS--GENERAL

Arabuli, A. B. [DISTRIBUTION AND QUANTITY OF SOME GAME-MAMMALS IN EASTERN GEORGIA.] *Zool. Zhur.* 49(3): 418-421. 1970. [From Biol. Abstr. 51(16), 1970. In Russian with English summ.] *WR 140: 37*
[Acad. Sci. Georgian SSR, Tiflis, USSR.]

Dauphiné, T. Charles. A WOLF KILLS A CARIBOU CALF. *Blue Jay* 27(2): 99. June 1969. *WR 140: 37*
[Canadian Wildl. Serv., 293 Albert St., Ottawa, Canada.] The wolf's teeth had lacerated the scalp of the calf and punctured and fractured the parietal, occipital, and frontal bones. There was no other evidence of injury or weakness.

Egoscue, H. J., J. G. Bittmenn, and J. A. Petrovich. SOME FECUNDITY AND LONGEVITY RECORDS FOR CAPTIVE SMALL MAMMALS. *J. Mammal.* 51(3): 622-623. Aug. 1970. *WR 140: 37*
[Univ. Utah, Dugway.]

Gray, David R. THE KILLING OF A BULL MUSKOX BY A SINGLE WOLF. *Arctic* 23(3): 197-199. Sept. 1970. *WR 140: 37*
[Univ. Alberta, Edmonton, Canada.]

Haglund, Bertil. WINTER HABITS OF THE LYNX *(LYNX LYNX)* AND THE WOLVERINE *(GULO GULO)* AS REVEALED BY TRACKING IN THE SNOW. *VII Intern. Congr. Game Biol.* p. 51-55. 1967. In English. *WR 140: 37*
[Kungl. Domanstyrelens, Stockholm, Sweden.]

Hissa, R., and H. Tarkkonen. SEASONAL VARIATIONS IN BROWN ADIPOSE TISSUE IN TWO SPECIES OF VOLES AND THE COMMON SHREW. *Ann. Zool. Fenn.* 6(4): 444-447, illus. 1969. [From Biol. Abstr. 51(17), 1970.] *WR 140: 37*
[Turku Univ., Turku, Finland.]

Kratochvíl, Josef. DER ANTRITT DES VERMEHRUNGSPROZESSES DER KLEINEN ERDSÄUGETIERE IN DER HOHEN TATRA. [THE BEGINNING OF THE PROCESS OF REPRODUCTION OF SMALL TERRESTRIAL MAMMALS IN THE HIGH TATRA.] *Zool. Listy* 17(4): 299-310. 1968. [From Biol. Abstr. 51(17), 1970. In German with English summ.] *WR 140: 37*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Maurer, Frank W., Jr. OBSERVATION OF FIGHTING BETWEEN A VOLE AND A SHREW. *Am. Midland Nat.* 84(2): 549. Oct. 1970. *WR 140: 37*
[Robert Coll., Bebek P. K. 8, Istanbul, Turkey.] Abstract: A juvenile female *Microtus pennsylvanicus* was found fighting with a male *Blarina brevicauda*. Although indirect evidence of interaction between these two species has been reported, this may be the first visual record of direct interaction occurring in a natural situation.

Pulliainen, Erkki. SUOMESSA VUONNA 1968 KAADETUT KARHUT JA ILVEKSET. [THE NUMBER OF BEAR *(URSUS ARCTOS)* AND LYNX *(LYNX LYNX)* KILLED IN FINLAND IN 1968.] *Suomen Riista* 22: 145-149. 1970. In Finnish with English summ. *WR 140: 38*

Shirer, Hampton W., and Henry S. Fitch. COMPARISON FROM RADIOTRACKING OF MOVEMENTS AND DENNING HABITS OF THE RACCOON, STRIPED SKUNK, AND OPOSSUM IN NORTHEASTERN KANSAS. *J. Mammal.* 51(3): 491-503, 2 figs. Aug. 1970. *WR 140: 38*
[Univ. Kans., Lawrence.] Abstract: A comparative study of spatial relationships of the opossum *(Didelphis marsupialis)*, raccoon *(Procyon lotor)*, and striped skunk *(Mephitis mephitis)* was made on the University of Kansas Natural History Reservation, an area of deciduous woodland, brush and grassland. Thirty-nine animals, including 27 opossums, eight raccoons and four skunks, were each equipped with small radio transmitters and were trailed to their dens over periods ranging from 2 to 239 days. Each animal was found to use a series of dens and each well-situated den was used by many different individuals. Sometimes two or several different animals used a den simultaneously; on one occasion an opossum and a skunk were known to have used the same den simultaneously over a period of days. Whereas raccoons and skunks are somewhat social, opossums are generally solitary and instances of known co-occupancy could be attributed either to chance or to sexual attraction. Average occupancy of a den was 1.5 days for the raccoons and 2.2 days for both skunks and opossums. The average shift between successive dens was 1430 feet for the raccoon, 1359 feet for the skunk and 990 feet for the opossum. The most used dens were underground and were situated along a hilltop limestone outcrop. Raccoons often spent the day in trees, sometimes in cavities but more often in exposed situations such as on top of the platform of an old squirrel nest. Sign indicated that the underground dens used by all three species were chiefly the work of the striped skunk.

Sokur, I. T. [THE INFLUENCE OF HUMAN ACTIVITY UPON THE MAMMAL FAUNA OF THE UKRAINE.] *VII Intern. Congr. Game Biol.* p. 545-547. 1967. In Russian. *WR 140: 38*
[Inst. Zool. Akad. Nauk, Kiev, USSR.]

Švigelj, Lado. THE INFLUENCE OF THE BEAR AND THE WOLF ON THE INTENSIVE MANAGEMENT OF THE HOOFED GAME. *VII Intern. Congr. Game Biol.* p. 139-144. 1967. In English with French summ. *WR 140: 38*
[Gojitveno lovišče "Rog," Kočevje, Yugoslavia.]

Tserevitinov, B. F. [REGULATION OF GEOGRAPHICAL VARIABILITY OF THE BODY SIZE OF GAME ANIMALS.] *VIII Intern. Congr. Game Biol.* p. 333-336. 1970. In Russian with English summ. *WR 140: 38*
[Moscow Veterinary Acad., Moscow, USSR.]

MAMMALS--TECHNIQUES

Ebedes, H. THE USE OF SERNYLAN AS AN IMMOBILISING AGENT AND ANAESTHETIC FOR WILD CARNIVOROUS MAMMALS IN SOUTH WEST AFRICA. *Madoqua* no. 2. p. 19-25, 5 [figs.]. 1970. *WR 140: 38*
"The dosage-rates used by us to anaesthetise three species of wild carnivorous mammals are lower than those used by other workers. A dosage rate of 0.4 mg to 1 mg per lb. Sernylan alone, or in combination with a small quantity of tranquillizer such as Acetylpromazine, Siquil or Largactil is recommended to achieve safe and satisfactory anaesthesia."

Golley, F. B., J. Pelikán, and L. Ryszkowski. RESULTS OF DISCUSSION ON THE IBP STANDARD-MINIMUM TRAPPING GRID AND RECOMMENDATIONS FOR ITS IMPROVEMENT. *Small Mammal Newsl.* (Warsaw) 2(9): 195-198. Aug. 1968. [From J. Mammal. 51 (4, suppl.), 1970.] *WR 140: 38*

Gorecki, Andrzej, and Tadeusz Hanusz. PROSTY CZUJNUK DO REJESTRACJI AKTYWNOSCI MALYCH SSAKÓW. [A SIMPLE INDICATOR FOR REGISTERING THE ACTIVITY OF SMALL MAMMALS.] *Ecologia Polska--Ser. B* 14(1): 33-37, illus. 1968. [From Biol. Abstr. 51(18), 1970. In Polish with English summ.] *WR 140: 39*

Grant, P. R. A POTENTIAL BIAS IN THE USE OF LONGWORTH TRAPS. *J. Mammal.* 51 (4): 831-835. Nov. 1970. *WR 140: 39*
[McGill Univ., Montreal, Quebec, Canada.]

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[Acad. Med. Sci. USSR, Moscow, USSR.]

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Abstract only.

Lord, R. D., A. M. Vilches, J. I. Maiztegui, and C. A. Soldini. THE TRACKING BOARD: A RELATIVE CENSUS TECHNIQUE FOR STUDYING RODENTS. *J. Mammal.* 51(4): 828-829. Nov. 1970. *WR 140: 39*
[Centro Panamericano Zoonosis, Casilla 23, Ramos Mejia, Argentina.]

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Large animals such as antelopes will not attempt to go through or around corral walls covered with plastic "curtains."

Pelikán, Jaroslav. THE ESTIMATION OF POPULATION DENSITY IN SMALL MAMMALS. p. 267-273. In: Petrusewicz, K., editor. *Secondary Productivity of Terrestrial Ecosystems* (Warsaw). 1967. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 39*

Petrides, G. A. CHROMIUM-51 AS AN INDICATOR OF ENERGY FLOW CHARACTERISTICS IN SMALL MAMMALS. *Small Mammal Newsl.* (Warsaw) 2(7): 139. June 1968. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 39*

Seidensticker, John C. IV, Maurice G. Hornocker, Richard R. Knight, and Steven L. Judd. EQUIPMENT AND TECHNIQUES FOR RADIOTRACKING MOUNTAIN LIONS AND ELK. *Forest, Wildl. & Range Expt. Sta. Bull.* no. 6. 20 p., 14 figs. Sept. 1970. *WR 140: 39*
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[Kochi Women's Univ., Kochi, Japan.]

MAMMALS--FAUNAS & MANUALS

Atallah, Sana Isa. MAMMALS OF THE EASTERN MEDITERRANEAN REGION; THEIR ECOLOGY, SYSTEMATICS AND ZOOGEOGRAPHICAL RELATIONSHIPS. *Ph.D. thesis, Univ. Conn.* 305 p. 1969. [From Dissertation Abstr. Intern 31(4B), 1970.] *WR 140: 40*

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Long, Charles A. MAMMALS OF CENTRAL WISCONSIN. *Wis. State Univ. Mus. Nat. Hist., Faunal Floral Rept.* 3: 1-59. 25 June 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 40*

Péfaur, J. CONSIDERACIONES SOBRE EL PROBLEMA DE LA CONSERVACIÓN DE LOS MAMÍFEROS SILVESTRES CHILENOS. [COMMENTS ON THE CONSERVATION OF CHILEAN WILD MAMMALS.] *Bol. Univ. Chile* nos. 93-94: 4-10, 1 fig. June-July 1969. In Spanish. *WR 140: 40*
[Univ. Kans., Lawrence.] With a tabulation of the distribution of wild mammals by province and a list of the mammals of Chile.

Péfaur, J. LISTA DE MAMÍFEROS SILVESTRES PRESENTES EN CHILE. [CHECKLIST OF THE WILD MAMMALS OF CHILE.] *Bol. Univ. Chile* nos. 97-98: 62-63. June-July 1969. *WR 140: 40*
[Univ. Kans., Lawrence.]

Saint Girons, M. C., and H. Saint Girons. DONNÉES SUR L'ÉCOLOGIE DES PETITS MAMMIFÈRES EN LAPONIE. [DATA ON THE ECOLOGY OF SMALL MAMMALS OF LAPLAND.] *Terre & Vie* 1970(3): 331-345, 3 figs. July-Sept. 1970. In French. *WR 140: 40*
[Mus. Natl. Hist. Nat., Brunoy, France.]

Soper, J. Dewey. THE MAMMALS OF JASPER NATIONAL PARK, ALBERTA. *Canadian Wildl. Serv. Rept. Ser.* no. 10. p. 1-80, 15 figs. + 1 folded map. 1970. Price $2.50. In English with French summ. *WR 140: 40*
Annotated list of 52 spp.

Yoshida, Hiroichi. [NOTES ON THE SMALL MAMMALS OF MT. DAISEN, TOTTORI PREF., HONSHU.] *J. Mamm. Soc. Japan* 4(4-6): 127-131. Dec. 1969. [From J. Mammal. 51 (4, suppl.), 1970. In Japanese with English summ.] *WR 140: 40*

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Ingersol, Robert H. THE ECOLOGICAL STRATIFICATION OF MAMMALS IN THE EASTERN CHERCHER HIGHLANDS OF HARAR PROVINCE, ETHIOPIA. *Ph.D. thesis, Okla. State Univ.* 178 p. 1968. [From Dissertation Abstr. Intern. 30(3B), 1969.] *WR 140: 41*

Smith, Howard Duane. SMALL MAMMAL POPULATIONS IN BIOENERGETICS IN THE WASATCH MOUNTAINS, UTAH. *Ph.D. thesis, Univ. Ill.* 129 p. 1969. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 41*

Four species of small mammals, *Peromyscus maniculatus, Microtus longicaudus, Zapus princeps,* and *Eutamias minimus*, were predominant, comprising 90% of the small mammals trapped. *Microtus longicaudus* were found to severely debark red elderberry during the winter. The *Microtus* population decline in the fall and winter of 1964-1965 corresponded to a similar reduction in the per cent of debarking.

MAMMALS--PARASITES & DISEASES

Alvarez, Víctor, Germán Rivera, Amador Neghme, and Hugo Schenone. TRIQUINOSIS EN ANIMALES DE CHILE. [TRICHINOSIS IN ANIMALS IN CHILE.] *Bol. Chileno Parasitol.* 25(1&2): 83-86. Jan.-Mar. and Apr.-June 1970. In Spanish with English summ. *WR 140: 41*

[Serv. Nacl. Salud, Santiago, Chile.] No infection was found in 2,063 specimens of mammals from the central region of Chile (5 species of carnivores and 9 species of rodents), nor was infection found in 80 whales caught in Chilean waters.--From abstr.

Atwood, Earl L., John T. Lamb, Jr., and Daniel E. Sonenshine. A CONTRIBUTION TO THE EPIDEMIOLOGY OF ROCKY MOUNTAIN SPOTTED FEVER IN THE EASTERN UNITED STATES. *Am. J. Trop. Med. Hyg.* 14(5): 831-837, 3 figs. 1965. *WR 140: 41*

[Walter Reed Army Med. Center, Washington, D.C.] Currently or previously infected small mammals were present in the immediate vicinity of case locations investigated and were apparently serving as a reservoir of the infectious agent. The manner in which certain trends in land use combine to increase the tick habitat area was discussed.--From summ.

Bigler, William J. VENEZUELAN ENCEPHALITIS ANTIBODY STUDIES IN CERTAIN FLORIDA WILDLIFE. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 267-270, 1 fig. July 1969. *WR 140: 41*

[Fla. State Board Health, Jacksonville.] Antibodies to Venezuelan encephalitis were found in 29 sera from *Peromyscus gossypinus, Sigmodon hispidus, Oryzomys palustris, Rattus rattus,* and *Odocoileus virginianus*.--From abstr.

Cavanaugh, D. C., P. F. Ryan, and J. D. Marshall, Jr. THE ROLE OF COMMENSAL RODENTS AND THEIR ECTOPARASITES IN THE ECOLOGY AND TRANSMISSION OF PLAGUE IN SOUTHEAST ASIA. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 187-194. July 1969. *WR 140: 41*

[Walter Reed Army Inst. Res., Washington, D.C.] The following mammals were involved in the epidemiology of the plague: *Suncus murinus, Rattus exulans, R. norvegicus, R. nitidus,* and *Bandicota indica.*

Hendricks, Stanley L., and Vaughn A. Seaton. RABIES IN WILD ANIMALS TRAPPED FOR PELTS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 231-234, 1 fig. July 1969. *WR 140: 41*

[Iowa State Dept. Health, Des Moines.] Abstract: The brains of 1,634 wild animals trapped for pelts were examined for rabies by the flurorescent antibody procedure. Twenty-one of 268 striped skunks and 2 of 52 spotted skunks examined were positive for rabies. Thirteen hundred twenty three animals including 7 badgers, 65 coyotes, 365 foxes, 1 weasel, 377 mink, 52 muskrats, 208 opossums, 219 raccoons and 1 wolf were negative.

Hoff, Gerald L., Thomas M. Yuill, John O. Iversen, and Robert P. Hanson. SELECTED MICROBIAL AGENTS IN SNOWSHOE HARES AND OTHER VERTEBRATES OF ALBERTA. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 472-478. Oct. 1970. *WR 140: 42*
[Univ. Wis., Madison.]

Neiland, K. A. RANGIFERINE BRUCELLOSIS IN ALASKAN CANIDS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 136-139. July 1970. *WR 140: 42*
[Alaska Dept. Fish & Game, Fairbanks.] Abstract: The first known case of rangiferine brucellosis caused by *Brucella suis* biotype 4 in a sled dog has been proven by isolation of the organism from the naturally infected animal. The infection was undoubtedly contracted from eating raw, infected barren-ground caribou, *Rangifer-tarandus granti*, in which the disease is enzootic. Limited experience with infections in sled dogs suggests that the disease may run a comparatively mild course in them. Serological evidence indicating the natural occurrence of the disease in wolves, *Canis lupus*, also is reported for the first time.

Page, L. A., and K. Erickson. SEROLOGIC EVIDENCE OF NATURAL AND EXPERIMENTAL TRANSFERS OF *CHLAMYDIA PSITTACI* BETWEEN WILD AND DOMESTIC ANIMALS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 284-290. July 1969. *WR 140: 42*
[Natl. Animal Disease Lab., Ames, Iowa.] Transfers of chlamydiae between different host species are possible, and the likelihood is great that they occur in nature. It cannot be concluded from the evidence presented that transfers between wild and domestic animals play a significant role in disease problems in domestic animals.

Peirce, M. A. THE PRESENCE OF *GRAHAMELLA* (BRUMPT, 1911) IN SMALL MAMMALS FROM MUGUGA, KENYA. *East African Wildl. J.* 8: 207-208. Aug. 1970. *WR 140: 42*
[East African Vet. Res. Organisation, Muguga, P.O. Kabete, Kenya.]

Sims, Ruth Albrae. A STUDY OF NATURAL DIFFERENCES AND INDUCED ALTERATIONS IN RABIESVIRUS STRAINS. *Ph.D. thesis, Univ. Texas.* 117 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 42*

Twigg, G. I., Sylvia K. Sikes, and D. M. Hughes. EVIDENCE OF LEPTOSPIROSIS IN SOME LARGE EAST AFRICAN MAMMALS. *East African Wildl. J.* 8: 197-198. Aug. 1970. *WR 140: 42*
[Royal Holloway Coll., Englefield Green, Surrey, England.]

Van Peenen, P. F. D., and J. F. Duncan. PIROPLASMS (PROTOZOA: SARCODINA) OF WILD MAMMALS IN CALIFORNIA. *Bull. Wildl. Disease Assoc.* 4(1): 3-8, 3 figs. Jan. 1968. *WR 140: 42*
[U.S. Naval Med. Res. Inst., Bethesda, Md.] Piroplasms were found in the blood of *Neotoma lepida, Peromyscus californicus, Microtus californicus, Spermophilus beecheyi* and *Sylvilagus audubonii* during wildlife disease surveys in Southern California. Although naturally infected animals appeared healthy, splenectomy of naturally or experimentally infected animals invariably resulted in severe parasitemias and anemias, often terminating fatally. All of the piroplasms were indistinguishable morphologically and were considered to belong to the same species: *Babesia microti.*--From abstr.

SHREWS, MOLES, BATS

Allison, Truett, and Henry Van Twyver. SLEEP IN THE MOLES, *SCALOPUS AQUATICUS* AND *CONDYLURA CRISTATA*. *Expt. Neurol.* 27(3): 564-578. June 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 42*

Atallah, Sana I. BATS OF THE GENUS *MYOTIS* (FAMILY VESPERTILIONIDAE) FROM LEBANON. *Univ. Conn. Occas. Pap. Biol. Sci. Ser.* 1(4): 205-212. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 43*
[Univ. Conn., Storrs.]

Braaksma, S. WINTERVERBLIJFPLAATS VAN ROSSE VLEERMUIZEN IN EEN KASTEEL. [WINTER ROOSTS OF BATS IN A CASTLE.] *Levende Nat.* 72: 185-188. 1969. In Dutch with English summ. *WR 140: 43*
"Myotis mystacinus, Pipistrellus pipistrellus, Nyctalus noctula, and *Plecotus* sp."

Bradbury, Jack Winningham. MECHANISMS OF TARGET DISCRIMINATION BY THE ECHO-LOCATING BAT, *VAMPYRUM SPECTRUM*. *Ph.D. thesis, Rockefeller Univ.* 160 p. 1968. [From Dissertation Abstr. Intern. 30(4B), 1969.] *WR 140: 43*

Bree, P. J. H. van, and S. Braaksma. NIEUWE FAUNISTISCHE GEGEVENS BETREFFENDE DE VLEERMUIS *PLECOTUS AUSTRIACUS* FISCHER, 1829, IN NEDERLAND. [NEW FAUNISTIC INFORMATION CONCERNING THE LONG-EARED BAT *(PLECOTUS AUSTRIACUS)* IN THE NETHERLANDS.] *Natuurhist. Maandblad* 56(1): 8-12, 2 figs. [1967.] In Dutch with English summ. *WR 140: 43*
[Zool. Mus., Amsterdam, Netherlands.] Distribution of *Plecotus auritus* and *P. austriacus* in the Netherlands.

Bruce, David Stewart, and Jacob E. Wiebers. BODY WEIGHT OF *MYOTIS LUCIFUGUS* UNDER NATURAL AND LABORATORY CONDITIONS. *J. Mammal.* 51(4): 823-824. Nov. 1970. *WR 140: 43*
[Seattle Pacific Coll., Seattle, Wash.]

Buckner, Charles H. DIRECT OBSERVATION OF SHREW PREDATION ON INSECTS AND FISH. *Blue Jay* 28(4): 171-172, [1 fig.]. Dec. 1970. *WR 140: 43*
[Dept. Fisheries & Forestry, Ottawa, Ontario, Canada.] *"Sorex c. cinereus, S. arcticus laricorum,* and *S. palustris navigator."*

Campbell, Thomas E. *BLARINA BREVICAUDA* AND *CRYPTOTIS PARVA* DO NOT DAMAGE LONGLEAF PINE COTYLEDONS. *Am. Midland Nat.* 84(1): 256-257. July 1970. *WR 140: 43*
[SE Forest Expt. Sta., Pineville, La.] Abstract: About 18,000 trap-nights were required to capture 104 shrews in central Louisiana. The ratio of captured *Blarina brevicauda* to *Cryptotis parva* was about 3:1. Sixty-four animals died in the traps and 12 others succumbed within 48 hrs. The 28 caged survivors did not damage juvenile seedlings of longleaf pine *(P. palustris)* in the distinctive manner of an unidentified predator(s) which can destroy up to 70% of a direct-seeded stand.

Choate, Jerry R. SYSTEMATICS AND ZOOGEOGRAPHY OF MIDDLE AMERICAN SHREWS OF THE GENUS *CRYPTOTIS*. *Univ. Kans. Publ., Mus. Nat. Hist.* 19(3): 195-317, 20 figs. 30 Dec. 1970. *WR 140: 43*

Cockrum, E. Lendell. MIGRATION IN THE GUANO BAT, *TADARIDA BRASILIENSIS*. *Univ. Kans. Mus. Nat. Hist. Publ.* 51. p. 303-336, illus. 1969. [From Biol. Abstr. 51(23), 1970.] *WR 140: 43*

Cosgrove, G. E., J. D. Story, and P. B. Dunaway. SUBCUTANEOUS FAT NECROSIS IN CAPTIVE BLARINA SHREWS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 516-517, 4 figs. Oct. 1970. *WR 140: 43*
[Oak Ridge Natl. Lab., Oak Ridge, Tenn.]

Crespo, Raúl Flores, Richard J. Burns, and Samuel B. Linhart. LOAD-LIFTING CAPACITY OF THE VAMPIRE BAT. *J. Mammal.* 51(3): 627-629, 1 fig. Aug. 1970. *WR 140: 43*
[Inst. Nacl. Investigaciones Pecuarias, Apartado 41-652, México, D.F.] *"Desmodus rotundus murinus."*

Davis, Wayne H., and Roger W. Barbour. LIFE HISTORY DATA ON SOME SOUTHWESTERN *MYOTIS*. *Southwestern Nat.* 15(2): 261-263. 15 Oct. 1970. *WR 140: 44*
[Univ. Ky., Lexington.]

Dinale, Giovanni. STUDI SUI CHIROTTERI ITALIANI: X. BIOMETRIA DI UNA COLLEZIONE DI *RHINOLOPHUS FERRUM EQUINUM* SCHREBER CATTURATI IN LIGURIA (ITALIA). [STUDIES OF ITALIAN CHIROPTERA: X. BIOMETRY OF A COLLECTION OF *RHINOLOPHUS FERRUM EQUINUM* SCHREBER CAPTURED IN LIGURIA (ITALY).] *Ann. Mus. Civico Storia Nat. "Giacomo Doria"* 77: 574-590. 1968-1969. [From J. Mammal. 51(4, suppl.), 1970. In Italian with English summ.] *WR 140: 44*

DiSalvo, Arthur F., William J. Bigler, Libero Ajello, Joseph E. Johnson III, and Joseph Palmer. BAT AND SOIL STUDIES FOR SOURCES OF HISTOPLASMOSIS IN FLORIDA. *Public Health Repts.* 85(12): 1063-1069. Dec. 1970. *WR 140: 44*
[S.C. State Board Health, Columbia.] Of the colonial species of bats studied *(Myotis austroriparius, Pipistrellus subflavus, Tadarida cynocephala,* and *Nycticeius humeralis)* only *M. austroriparius* proved to be infected by *Histoplasma capsulatum*. Eighty-one or 48% of the 170 specimens of this species collected were positive. *H. capsulatum* was also isolated from 10 of 147 guano-enriched soil samples (6.8%) collected in nine bat caves.

Dulić, Beatrica. ÖKOLOGISCHE BEOBACHTUNGEN DER FLEDERMÄUSE DER ADRIATISCHEN INSELN. [ECOLOGICAL OBSERVATIONS OF ADRIATIC ISLANDS BATS.] *Z. Säugetierk.* 35 (1): 45-51. Mar. 1970. [From J. Mammal. 51(4, suppl.), 1970. In German with English summ.] *WR 140: 44*

Easterla, David A., and Larry C. Watkins. BREEDING OF *LASIONYCTERIS NOCTIVAGANS* AND *NYCTICEIUS HUMERALIS* IN SOUTHWESTERN IOWA. *Am. Midland Nat.* 84(1): 254-255. July 1970. *WR 140: 44*
[Northwest Mo. State Coll., Maryville.]

Erkert, Siglind. [THE EFFECT OF LIGHT ON THE ACTIVITY OF FRUIT BATS *(MEGACHIROPTERA)*. *Z. Vergl. Physiol.* 67(3): 243-272. 29 Apr. 1970. [From J. Mammal. 51(4, suppl.), 1970. In German with English summ.] *WR 140: 44*

Fenton, Melville Brockett. ECOLOGICAL STUDIES OF BATS IN ONTARIO AND ADJACENT REGIONS. *Ph.D. thesis, Univ. Toronto.* 1969. To obtain a microfilm copy, please order directly from the National Library of Canada at Ottawa. [From Dissertation Abstr. Intern. 31(4B), 1970.] *WR 140: 44*

Findley, James S., and Gerald L. Traut. GEOGRAPHIC VARIATION IN *PIPISTRELLUS HESPERUS*. *J. Mammal.* 51(4): 741-765, 10 figs. Nov. 1970. *WR 140: 44*
[Univ. N. Mex., Albuquerque.]

Frylestam, Bo. STUDIER ÖVER LÅNGÖRADE FLADDERMUSEN *(PLECOTUS AURITUS* L.). [STUDIES OF LONG-EARED BATS *(PLECOTUS AURITUS* L.).] *Fauna & Flora* 65(2): 72-84. 1970. [From J. Mammal. 51(4, suppl.), 1970. In Swedish with German summ.] *WR 140: 44*

Gardner, Alfred L., Richard K. LaVal, and Don E. Wilson. THE DISTRIBUTIONAL STATUS OF SOME COSTA RICAN BATS. *J. Mammal.* 51(4): 712-729, 1 fig. Nov. 1970. *WR 140: 44*
[La. State Univ., Baton Rouge.] Distributional records for 34 spp. with comments on their taxonomy, life history, and reproductive activity.

Gauckler, Anton, and Manfred Kraus. KENNZEICHEN UND VERBREITUNG VON *MYOTIS BRANDTI* (EVERSMAN, 1845). [CHARACTERISTICS AND DISTRIBUTION OF *MYOTIS BRANDTI* (EVERSMAN, 1845).] *Z. Säugetierk.* 36(2): 113-124. May 1970. [From J. Mammal. 51(4, suppl.), 1970. In German with English summ.] *WR 140: 44*

Goodwin, Robert E. THE ECOLOGY OF JAMAICAN BATS. *J. Mammal.* 51(3): 571-579. Aug. 1970. *WR 140: 45*
[Colgate Univ., Hamilton, N.Y.] Abstract: Observations on habitat preference, roosting behavior, relative abundance, and distribution are reported for 14 species of Jamaican bats. In addition, data on the condition of the reproductive organs and on sex ratios during December and January are presented. Included in the list of species are the two rare and poorly known bats, *Phyllonycteris aphylla* and *Natalus major jamaicensis*.

Gopalakrishna, A. GESTATION PERIOD IN SOME INDIAN BATS. *J. Bombay Nat. Hist. Soc.* 66(2): 317-322. 1969. [From Biol. Abstr. 51(15), 1970.] *WR 140: 45*
[Coll. Sci., Nagpur, Maharashtra, India.]

Gould, Edwin. COMMUNICATION IN THREE GENERA OF SHREWS (SORICIDAE): *SUNCUS, BLARINA, & CRYPTOTIS.* In *Communications in Behavioral Biology*, Part A, Vol. 3. p. 11-31, 7 figs. Jan. 1969. *WR 140: 45*
[Johns Hopkins Univ., Baltimore, Md.] Seven sound types of *Suncus, Blarina* and *Cryptotis* are described. Infants displaced from the nest emit clicks and twitters. A whistle which may be a variant of the twitter is emitted by *Suncus* infants. Infant calls of *Suncus* emitted during maternal-infant caravan formation resemble calls of the receptive female during courtship.--From abstr.

Haensel, Joachim. ABWEICHENDE RUHEPLÄTZE IN STOLLEN ÜBERWINTERNDER FLEDERMÄUSE. [UNUSUAL RESTING PLACES OF HIBERNATING BATS IN CAVES.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 28: 277-280, illus. 1965/1966. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 45*

Hallander, Håkan. MULLVADEN. [MOLES.] *Sveriges Nat.* (Stockholm). p. 133-142. 1970. [From J. Mammal. 51(4, suppl.), 1970. In Swedish.] *WR 140: 45*

Hardin, James W., and Marion D. Hassell. OBSERVATION ON WAKING PERIODS AND MOVEMENTS OF *MYOTIS SODALIS* DURING HIBERNATION. *J. Mammal.* 51(4): 829-831. Nov. 1970. *WR 140: 45*
[Southern Ill. Univ., Carbondale.]

Harvey, Michael J. HOME RANGE, MOVEMENTS, AND DIEL ACTIVITY OF THE EASTERN MOLE, *SCALOPUS AQUATICUS. Ph.D. thesis, Univ. Ky.* 78 p. 1967. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 45*

Hassell, Marion Darden. INTRA-CAVE ACTIVITY OF FOUR SPECIES OF BATS HIBERNATING IN KENTUCKY. *Ph.D. thesis, Univ. Ky.* 80 p. 1967. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 45*

Heerdt, P. F. van, and J. Sluiter. ERFAHRUNGEN MIT KÜNSTLICHEN NISTHÖHLEN ZUR ANSIEDLUNG VON FLEDERMÄUSEN. [EXPERIENCES WITH ARTIFICIAL NESTING CAVITIES FOR THE ESTABLISHMENT OF BAT COLONIES.] *Myotis* (Bonn) 7: 12-15. Feb. 1970. [From J. Mammal. 51(4, suppl.), 1970. In German.] *WR 140: 45*

Henze, Otto. WIE VERHALT MAN SICH GEGENUBER FLEDERMAUSEN IN VOGELNISTKASTEN. [HOW SHOULD ONE CONSIDER BATS WHICH OCCUR IN BIRD NESTING-BOXES?] *Angew. Ornithol.* 3(2): 98-100. 1968. [From Biol. Abstr. 51(17), 1970. In German.] *WR 140: 45*
[Inst. Angew. Zool. Forstl. Forschungsanst., Munich, Germany.]

Henze, Otto. EINE 19 JAHRE ALTE BECHSTEIN-FLEDERMAUS *(MYOTIS BECHSTEINII).* [A 19-YEAR OLD BECHSTEIN'S BAT *MYOTIS BECHSTEINII.*] *Myotis* (Bonn) 7: 21-23. Feb. 1970. [From J. Mammal. 51(4, suppl.), 1970. In German.] *WR 140: 45*

Hill, Edward P. III. BAT CONTROL WITH HIGH FREQUENCY SOUND. *Pest Control* 38(9): 18. Sept. 1970. *WR 140: 45*
[Ala. Coop. Wildl. Res. Unit, Auburn.] Effective use of twelve adjustable high frequency (4,000-18,000 vibrations per second) dog whistles to rout 500-1000 bats from a nuclear power station near Cordova, Illinois.

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[Harvard Univ., Cambridge, Mass.]

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Abstract only.

Kisselev, V. E. [A CONTRIBUTION TO THE METHOD OF AGE DETERMINATION IN *TALPA EUROPEA.*] *Zool. Zhur.* 49(2): 294-297. Feb. 1970. [From J. Mammal. 51(4, suppl.), 1970. In Russian with English summ.] *WR 140: 46*

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Abstract only.

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Listing of 3730 bats (16 spp.) observed primarily in grottos.

McNab, Brian K. THE ECONOMICS OF TEMPERATURE REGULATION IN NEOTROPICAL BATS. *Comp. Biochem. Physiol.* 31(2): 227-268, illus. 1969. [From Biol. Abstr. 51 (20), 1970.] *WR 140: 46*
[Univ. Fla., Gainesville.]

Menu, Henri. RECHERCHES SUR LES CHIROPTERES DE L'AISNE ET DE LA MARNE. [RESEARCHES ON THE CHIROPTERA OF THE AISNE AND MARNE AREAS.] *Ann. Univ. & ARERS* 7(1): 13-28, illus. 1969. [From Biol. Abstr. 51(19), 1970. In French.] *WR 140: 46*

Miura, Teiji, Kohei Toyokawa, Rae Allen, and S. Edward Sulkin. STUDIES OF ARTHROPOD-BORNE VIRUS INFECTIONS IN CHIROPTERA. VII. SEROLOGIC EVIDENCE OF NATURAL JAPANESE B ENCEPHALITIS VIRUS INFECTION IN BATS. *Am. J. Trop. Med. Hyg.* 19(1): 88-93. Jan. 1970. *WR 140: 46*
[Univ. Tokyo, Tokyo, Japan.] Plaque-reduction method was used for assaying infection of Japanese B encephalitis (JBE) in bats. Neutralizing antibodies were demonstrated in 8% of the specimens of plasma from bats netted in Honshu and Kyushu, Japan, whereas only 3% of the specimens from bats netted in Hokkaido, were positive. Bats with neutralizing antibodies against JBE virus were found with about equal frequency in groups collected during each of the four seasons of the year. Antibodies against JBE virus were also demonstrated in 7% of 275 specimens of plasma tested by the *in vivo* neutralization test in weanling mice.--From abstr.

Moore, G. John, and George H. Raymond. PROLONGED INCUBATION PERIOD OF RABIES IN A NATURALLY INFECTED INSECTIVOROUS BAT, *EPTESICUS FUSCUS* (BEAUVOIS). *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 167-168. July 1970. *WR 140: 46*
[Natl. Inst. Allergy & Infectious Disease, Rocky Mountain Lab., Hamilton, Mont.] A case history.

Myers, Richard F., and Edward Pembleton. POPULATION TRENDS OF OZARK BATS. *Bull. Natl. Speleol. Soc.* 31(2): 44-45. Apr. 1969. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 47*
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[Univ. Madras, Madras City, India.]

Pagels, John Frederick. THE DYNAMICS OF TEMPERATURE RESPONSES OF THE FREE-TAILED BAT, *TADARIDA BRASILIENSIS CYNOCEPHALA* (LE CONTE). *Ph.D. thesis, Tulane Univ.* 155 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 47*

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Combining narrative, personal anecdote, and his own scientific studies, the author writes about bats as they are found in nature and in association with man. Folklore and superstition are recounted along with natural history; "bat cuisine" and the contributions of bat sonar studies to the new technology are treated with equal emphasis.

Procter, John W., and Eugene H. Studier. EFFECTS OF AMBIENT TEMPERATURE AND WATER VAPOR PRESSURE ON EVAPORATIVE WATER LOSS IN *MYOTIS LUCIFUGUS*. *J. Mammal.* 51(4): 799-804, 2 figs. Nov. 1970. *WR 140: 47*
[N. Mex. Highlands Univ., Las Vegas.]

Purchase, D. SIXTH, SEVENTH, AND EIGHTH ANNUAL REPORTS ON BAT-BANDING IN AUSTRALIA, JULY 1964 TO JUNE 1967. *Australia CSIRO Div. Wildl. Res. Tech. Pap.* 17: 2-16. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 140: 47*
[Div. Wildl. Res., CSIRO, Melbourne, Victoria, Australia.]

Radovsky, Frank Jay. THE MACRONYSSIDAE AND LAELAPIDAE (ACARINA: MESOSTIGMATA) PARASITIC ON BATS. *Ph.D. thesis, Univ. Calif.* (Berkeley). 601 p. 1964. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 47*
Genera in the families Macronyssidae and Laelapidae that include parasites of Chiroptera are revised. These mites have been found on representatives of each superfamily and all common families of bats, and occur throughout the geographic range of the Chiroptera. The genera found on bats and those occurring on other hosts are almost entirely mutually exclusive.

Richter, H. DIE ZWEIFARBLEFERMAUS, *VESPERTILIO DISCOLOR* NATTERER, IN SACHSEN. [THE TWO-TONE BAT, *VESPERTILIO DISCOLOR* NATTERER, IN SAXONY (GERMANY).] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 29: 55-64, illus. 1967/1968. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 47*

Seesee, Floyd M. *NEOGLYPHE SORICIS (=OPISTHIOGLYPHE SORICIS* POJMAŃSKA, 1956*)*, (TREMATODA: PLAGIORCHIIDAE) FROM SHREWS IN ALASKA. *Parasitology* 61(2): 323-328, 1 fig. Oct. 1970. *WR 140: 47*
[Univ. Idaho, Moscow.]

Stones, Robert C., and Garth W. Holyoak. SPRING OCCURRENCE OF A SILVER-HAIRED BAT IN UPPER MICHIGAN. *J. Mammal.* 51(4): 811-812. Nov. 1970. *WR 140: 47*
[Mich. Technol. Univ., Houghton.] *"Lasionycteris noctivagans."*

Strelkov, Petr P. MIGRATORY AND STATIONARY BATS (CHIROPTERA) OF THE EUROPEAN PART OF THE SOVIET UNION. *Acta Zool. Cracoviensia* 14(16): 393-439. 31 Dec. 1969. [From J. Mammal. 51(4, suppl.), 1970. In (English) with Polish and Russian summ.] *WR 140: 47*

Suga, Nobuo. ECHO-RANGING NEURONS IN THE INFERIOR COLLICULUS OF BATS. *Science* 170(3956): 449-452, 3 figs. 23 Oct. 1970. *WR 140: 48*
[Washington Univ., St. Louis, Mo.] Abstract: Bats measure the distance to an object in terms of the time lag between their outgoing orientation sounds and the returning echo. For measurement of the time lag, the latency of response of a neuron to a stimulus must be nearly constant regardless of the stimulus amplitude and envelope. Otherwise, a large error would be introduced into the measurement. Bats have neurons that are specialized for echo ranging.

Sulkin, S. Edward, Rae Allen, Teiji Miura, and Kohei Toyokawa. STUDIES OF ARTHROPOD-BORNE VIRUS INFECTIONS IN CHIROPTERA. VI. ISOLATION OF JAPANESE B ENCEPHALITIS VIRUS FROM NATURALLY INFECTED BATS. *Am. J. Trop. Med. Hyg.* 19(1): 77-87, 1 fig. Jan. 1970. *WR 140: 48*
[Univ. Texas, Dallas.] Studies on the role of bats in the ecology of Japanese B encephalitis virus in Japan disclosed equal frequency from groups of bats netted during each of the four seasons of the year. No viruses were recovered from bats obtained in Hokkaido. That bats are effective as reservoir hosts for arboviruses is put forward.--From abstr.

Vogel, Peter. BEOBACHTUNGEN ZUM INTRASPEZIFISCHEN VERHALTEN DER HAUSSPITZMAUS *(CROCIDURA RUSSULA* HERMANN, 1870*)*. [OBSERVATIONS ON THE INTRASPECIFIC BEHAVIOR OF THE WHITE-TOOTH *(CROCIDURA RUSSULA).*] *Rev. Suisse Zool.* 76(56): 1079-1086. Dec. 1969. [From J. Mammal. 51(4, suppl.), 1970. In German.] *WR 140: 48*

Watkins, Larry C. OBSERVATIONS ON THE DISTRIBUTION AND NATURAL HISTORY OF THE EVENING BAT *(NYCTICEIUS HUMERALIS)* IN NORTHWESTERN MISSOURI AND ADJACENT IOWA. *Trans. Kans. Acad. Sci.* 72(3): 330-336, 1 fig. 3 Mar. 1970. *WR 140: 48*
[Univ. Kans., Lawrence.]

Williams, Timothy Cheney. NOCTURNAL ORIENTATION TECHNIQUES OF A NEOTROPICAL BAT. *Ph.D. thesis, Rockefeller Univ.* 174 p. 1968. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 48*

Williams, Timothy C., and Janet M. Williams. RADIO TRACKING OF HOMING AND FEEDING FLIGHTS OF A NEOTROPICAL BAT, *PHYLLOSTOMUS HASTATUS. Animal Behaviour* 18(2): 302-309, 4 figs. May 1970. *WR 140: 48*
[SUNY, Buffalo, N.Y.] Summary: Flights of the bat *Phyllostomus hastatus* released at distances of 20, 30 and 60 km from the home roost were followed by radio tracking. Flights from 20 km were accurately directed homeward, those from 30 km less so, and bats released at 60 km wandered in all directions. Radio tracking was also used to study the movements of bats near their home roosts in search of food. The bats regularly made rapid, well-oriented flights to and from their feeding areas. No two bats followed the same route during these flights. The same visual orientational systems which allow these bats to return rapidly during homing experiments may also facilitate flights to and from feeding areas and aid in the search for new sources of food.

Wilson, Don E., and James S. Findley. REPRODUCTIVE CYCLE OF A NEOTROPICAL INSECTIVOROUS BAT, *MYOTIS NIGRICANS. Nature* 225(5238): 1155, 1 fig. 21 Mar. 1970. *WR 140: 48*
[Univ. N. Mex., Albuquerque.]

Winkler, W. G. AIRBORNE RABIES VIRUS ISOLATION. *Bull. Wildl. Disease Assoc.* 4(2): 37-38. Apr. 1968. *WR 140: 48*
[Natl. Communicable Disease Center, Las Cruces, N. Mex.] Airborne rabies virus was isolated from Frio Cave, Texas, using a mechanical air sampler. Several types of samplers have been used, but only an electrostatic precipitation device has collected measurable quantities of virus. The use of a mechanical sampler can facilitate quantitation of virus in caves.--From abstr.

Wolverton, Charles, and Arlan L. Edgar. TEMPERATURE REGULATION OF MIGRATING AND HIBERNATING BATS IN GRATIOT COUNTY, MICHIGAN. *Bios* 40(4): 147-153, illus. 1969. [From Biol. Abstr. 51(20), 1970.] *WR 140: 49*
[1007 Beard Street, Flint, Mich.]

RABBITS & PIKAS

Agnew, A. D. Q., and John E. C. Flux. PLANT DISPERSAL BY HARES *(LEPUS CAPENSIS* L.*)* IN KENYA. *Ecology* 51(4): 735-737, 1 fig. Summer 1970. *WR 140: 49*
[Univ. Coll. Nairobi, Nairobi, Kenya.] Of 369 hares examined, 160 had a total of 810 disseminules of 17 plant species in their fur.--Courtesy/ Paul A. Stewart.

Black, Stephen L., and C. H. Vanderwolf. THUMPING BEHAVIOR IN THE RABBIT. *Physiol. Behavior* 4(4): 445-449, illus. 1969. [From Biol. Abstr. 51(18), 1970.] *WR 140: 49*
[McMaster Univ., Hamilton, Ontario, Canada.]

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[Natl. Vet. Inst., 10405 Stockholm, Sweden.] Since the 1930's, more than 10,000 hares, picked up dead in the field, were examined in Scandinavia. Pseudotuberculosis was one of the most common infections being recorded in varying frequencies. Investigation material from the 1960's showed a decreased incidence of the disease in *Lepus europaeus*.--From summ.

Bothma, Jacobus du Plessis. POPULATION ECOLOGY OF THE COTTONTAIL RABBIT, *SYLVILAGUS FLORIDANUS*, ON THE WELDER WILDLIFE REFUGE, SOUTH TEXAS. *Ph.D. thesis, Texas A&M Univ.* 269 p. 1969. [From Dissertation Abstr. Intern. 30(3B), 1969.] *WR 140: 49*

Brüll, Heinz. HISTOLOGISCHE BEITRÄGE ZUR GESCHLECHTSREIFE DES FELDHASEN *(LEPUS EUROPAEUS* PALLAS*)*. [HISTOLOGICAL CONTRIBUTIONS ON THE SEXUAL DEVELOPMENT OF THE EUROPEAN HARE *(LEPUS EUROPAEUS* PALLAS*)*.] *VIII Intern. Congr. Game Biol.* p. 329-332, 8 figs. 1970. In German with Russian summ. *WR 140: 49*
[Wolfsberg über Kalten Kirchen, Holstein, Germany.]

Carvalho Varela, M. L'ÉTUDE DES HELMINTHOCÉNOSES DES LIÈVRES DU PORTUGAL. [THE STUDY ON HELMINTHOCENOSIS OF THE HARE IN PORTUGAL.] *VII Intern. Congr. Game Biol.* p. 407-472. 1967. In French with English summ. *WR 140: 49*
[Centro Zool. Junta Investigacões Ultramar, Lisbon, Portugal.]

Carvalho Varela, Manuel. L'HELMINTHOFAUNE DU LAPIN DE GARENNE, *ORYCTOLAGUS CUNICULUS*, L., AU PORTUGAL. [THE HELMINTHOFAUNA OF THE HARE *(ORYCTOLAGUS CUNICULUS)* IN PORTUGAL.] *VIII Intern. Congr. Game Biol.* p. 269-270. 1970. In French with Russian summ. *WR 140: 49*
[Centro Zool. Junta Investigacões Ultramar, Lisbon, Portugal.]

Chapman, Joseph Alan. ORIENTATION AND HOMING OF THE BRUSH RABBIT. *Ph.D. thesis, Oreg. State Univ.* 67 p. 1970. [From Dissertation Abstr. Intern. 31 (5B), 1970.] *WR 140: 49*

Eickhoff, Wilhelm. SOME HISTOLOGICAL ASPECTS OF MYXOMATOSIS IN WILD RABBITS. *VIII Intern. Congr. Game Biol.* p. 257-258. 1970. In English with Russian summ. *WR 140: 49*
[Pathol. Inst., Duisburg, Germany.]

Eley, Thomas J., Jr. STOMACH CONTENTS, WEIGHTS AND VOLUMES OF CAPE HARE. *East African Wildl. J.* 8: 202. Aug. 1970. *WR 140: 49*
[Humboldt State Coll., Arcata, Calif.]

Flux, John E. C. LIFE HISTORY OF THE MOUNTAIN HARE *(LEPUS TIMIDUS SCOTICUS)* IN NORTH-EAST SCOTLAND. *J. Zool.* 161(1): 75-123. May 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 50*

Flux, John E. C., and Jennifer U. M. Jarvis. GROWTH RATES OF TWO AFRICAN HARES, *LEPUS CAPENSIS*. *J. Mammal.* 51(4): 798-799. Nov. 1970. *WR 140: 50*
[Ecol. Div., DSIR, Lower Hutt, New Zealand.]

Gabrašanski, P., V. Želev, and L. Mutafov. [SOME BIOLOGICAL PECULIARITIES OF *FUSARIUM* INFECTION OF WILD HARES IN BULGARIA.] *VII Intern. Congr. Game Biol.* p. 479-482, 4 figs. 1967. In Russian with German summ. *WR 140: 50*
[Veterinarno-Med. Fakultet, Sofia, Bulgaria.]

Griffith, Richard E., Jr., and James Evans. CAPTURING JACKRABBITS BY NIGHT-LIGHTING. *J. Wildl. Mgmt.* 34(3): 637-639. July 1970. *WR 140: 50*
[Bur. Sport Fisheries & Wildl., Twin Falls, Idaho.] Abstract: Night-lighting accompanied by a vociferous approach and using stout, light-weight, short-handled nets and a specially equipped four-wheel-drive truck, has proved highly effective in netting black-tailed jackrabbits *(Lepus californicus)* in south-central Idaho. Four-man crews averaged 4-8 captures per hour; seven-man crews averaged 10-16 captures per hour.

Grolleau, G. INTOXICATION EXPÉRIMENTALE DE LIÈVRES PAR LE DNOC. [EXPERIMENTAL INTOXICATION OF HARES BY DNOC.] *Phytiatrie-Phytopharmacie* 16: 23-25, [1 fig.]. 1967. In French. *WR 140: 50*
[Lab. Petits Vertebres, Jouy-en-Josas, France.] "Dinitro-*o*-cresol."

Hanson, J. C., J. A. Bailey, and R. J. Siglin. ACTIVITY AND USE OF HABITAT BY RADIO-TAGGED COTTONTAILS DURING WINTER. *Trans. Ill. State Acad. Sci.* 62(3): 294-302, illus. 1969. [From Biol. Abstr. 51(21), 1970.] *WR 140: 50*
[Ill. Nat. Hist. Surv., Urbana.]

Hewson, Raymond. VARIATION IN REPRODUCTION AND SHOOTING BAGS OF MOUNTAIN HARES ON TWO MOORS IN NORTH-EAST SCOTLAND. *J. Appl. Ecol.* 7(2): 243-252, 1 fig. Aug. 1970. *WR 140: 50*
[Nature Conservancy, Blackhall, Banchory, Kincardineshire, Scotland.] Bigger litter size, earlier breeding, and higher hunting yields occurred over a period of years on the slightly more base-rich moor.

Hinds, David Stewart. A COMPARATIVE STUDY OF THERMOREGULATION AND WATER BALANCE IN HARES AND RABBITS OF THE SONORAN DESERT. *Ph.D. thesis, Univ. Ariz.* 164 p. 1970. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 50*

Hoff, G. L., T. M. Yuill, J. O. Iversen, and R. P. Hanson. SNOWSHOE HARES AND THE CALIFORNIA ENCEPHALITIS VIRUS GROUP IN ALBERTA, 1961-1968. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 254-259, 1 fig. July 1969. *WR 140: 50*
[Univ. Wis., Madison.] The neutralizing antibody prevalence to the California encephalitis virus group of viruses in adult hares was high, 58% to 95%, during the 6 years of snowshoe hare population decline, when the population dropped from over 600 hares per square mile to 3 hares per square mile. In the 2 years of population recovery thus far observed, the antibody prevalence has been low, 0% to 43%. The prevalence rates in juveniles have been lower than in the adults throughout the study.--From abstr.

Jakšić, B. L., and B. B. Banovčanin. PRÄLIMINARE UNTERSUCHUNGEN DER EPIDEMIOLOGIE DER PSEUDOTUBERKULOSE BEI DEN HASEN. [PRELIMINARY INVESTIGATIONS INTO THE EPIDEMIOLOGY OF PSEUDOTUBERCULOSIS IN THE HARE.] *VII Intern. Congr. Game Biol.* p. 463-466. 1967. In German with Russian summ. *WR 140: 50*
[Bulevar JNA 18, Belgrade, Yugoslavia.]

James, Ted R., and Robert W. Seabloom. ASPECTS OF GROWTH IN THE WHITE-TAILED JACK RABBIT. *Proc. N. Dak. Acad. Sci.* 23: 7-14. Apr. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 51*

Lopushinsky, Theodore. MYIASIS OF NESTLING COTTONTAIL RABBITS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(2): 98-100. Apr. 1970. *WR 140: 51*
[Mich. State Univ., East Lansing.]

McCoy, R. H., and Frank Steenbergen. STAPHYLOCOCCUS EPIZOOTIC IN WESTERN OREGON COTTONTAILS. *Bull. Wildl. Disease Assoc.* 5(1): 11. Jan. 1969. *WR 140: 51*
[Oreg. State Univ., Corvallis.]

Meslow, Edwin Charles. SNOWSHOE HARE POPULATION STUDIES AT ROCHESTER, ALBERTA. *Ph.D. thesis, Univ. Wis.* 109 p. 1970. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 51*
Snowshoe hare *(Lepus americanus)* populations were studied near Rochester, Alberta, during 1961-67; this period encompassed a peak in hare numbers, the decline to a low, and the initial stages of population recovery. The estimated magnitude of change exhibited on a square-mile study area was from 622 adult hares in April 1962 to 3 by summer of 1965; the June 1967 population was 24. The decline in the hare population resulted from a decrease in adult survival, a juvenile survival of only about 3 percent, and a halving of the reproductive rate.

Novlesky, Maynard A., and William G. Dyer. HELMINTHS OF THE EASTERN COTTONTAIL RABBIT, *SYLVILAGUS FLORIDANUS*, FROM NORTH DAKOTA. *Am. Midland Nat.* 84(1): 267-269. July 1970. *WR 140: 51*
[Minot State Coll., Minot, N. Dak.] Abstract: Eight species of helminths were recovered from 31 eastern cottontail rabbits, *Sylvilagus floridanus*, in North Dakota between January 1968, and January 1969. The 25 infected rabbits harbored one or more of the following species: *Ctenotaenia ctenoides, C. variabilis, Mosgovoyia pectinata americana,* coenurus of *Multiceps serialis,* cysticercus of *Taenia pisiformis, Dermatoxys veligera, Nematodirus triangularis,* and *Trichuris sylvilagi.* All represent new locality records as cottontail rabbit parasites.

Olmstead, Donald L. BEHAVIORAL COMPARISONS OF TWO SYMPATRIC SPECIES OF COTTONTAILS *(SYLVILAGUS FLORIDANUS)* AND *(SYLVILAGUS TRANSITIONALIS). Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 115-126, 4 figs. 1970. *WR 140: 51*
[Univ. Conn., Storrs.]

Pasławski, Tadeusz. THE USE OF HUNTERS' ASSISTANCE IN STUDIES ON THE EFFECT OF HARVEST METHODS UPON THE POPULATION OF EUROPEAN HARE. *VIII Intern. Congr. Game Biol.* p. 247-249. 1970. In English with Russian summ. *WR 140: 51*
[Korzeniowskiego ul., Warsaw, Poland.]

Pelton, Michael Ramsay. A CONTRIBUTION TO THE BIOLOGY AND MANAGEMENT OF THE COTTONTAIL RABBIT *(SYLVILAGUS FLORIDANUS MALLARUS)* IN GEORGIA. *Ph.D. thesis, Univ. Ga.* 181 p. 1969. [From Dissertation Abstr. Intern. 30(8B), 1970.] *WR 140: 51*
Sex, age, and regional comparisons of data on breeding, physiological condition, and anatomical factors of cottontail rabbits were made. The role of soils and land use was stressed as important factors contributing to significant differences.

Petrov, P. [ON THE REAL PROPAGATION COEFFICIENT OF *LEPUS EUROPAEUS TRANSSYLVANICUS* MATSCH. AND THE RELEVANT FACTORS.] *VII Intern. Congr. Game Biol.* p. 377-381, 3 figs. 1967. In Russian with English summ. *WR 140: 51*
[Inst. Lesa, Sofia, Bulgaria.]

Pujman, Vojtech, and Daniela Hanusova. SEASONAL CHANGES IN THE DIFFERENTIAL COUNT IN FEMORAL MARROW OF THE HARE *(LEPUS EUROPAEUS* PALL.). *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 69-70. Jan. 1970. *WR 140: 52*
[Pharm. & Biochem. Res. Inst., Praha, Czechoslovakia.]

Rieck, W. ERGEBNISSE DER UNTERSUCHUNG VON FELDHASENSTRECKEN. [THE DATA OF THE RESEARCH ON HARVEST OF HARES.] *VII Intern. Congr. Game Biol.* p. 383-388, 3 figs. 1967. In German with English summ. *WR 140: 52*
[Inst. Jagkunde, Hannover-Münden, Germany.]

Samson, Kay S. HELMINTHS OF BLACK-TAILED JACK RABBITS IN NEW MEXICO. *Bull. Wildl. Disease Assoc.* 4(4): 130. Oct. 1968. *WR 140: 52*
[P.O. Box 3518, Las Cruces, N. Mex.]

Stoddart, L. Charles. A TELEMETRIC METHOD FOR DETECTING JACKRABBIT MORTALITY. *J. Wildl. Mgmt.* 34(3): 501-507, 2 figs. July 1970. *WR 140: 52*
[Utah State Univ., Logan.] Abstract: A long-range pulsing transmitter equipped with a thermistor was developed for detecting rate, time, and cause of mortality in black-tailed jackrabbits *(Lepus californicus)*. The thermistor, an integral part of the transmitter collar and located externally over the back of the animal's neck, is sensitive to body temperature and reduces the transmitter pulse rate of 30% as the animal cools from 35 to 20 C after death. Longevities of the 50 g, 50 mc (megacycle) transmitters range from 4 to 8 months using two Eveready E-1 mercury cells in series. Seventy-five rabbits have been transmitter-equipped and the pulse rates monitored manually at ranges up to 9 miles from stationary 80-ft towers. A hand-held radio is used to locate dead animals in the field. Of the 25 transmitter-equipped animals found dead, 64% apparently were killed by coyotes, 12% died of unknown factors and were uneaten, 20% were found partially eaten by avian predators or scavengers, and one animal was shot by a hunter 6 miles from the study area. Semi-annual mortality rates calculated from October, 1967, through October, 1969, for transmittered animals are the same, on the average (41%), as those calculated demographically for the entire population.

Terrel, Ted L. THE SWAMP RABBIT, *SYLVILAGUS AQUATICUS*, IN INDIANA. *M.S. thesis, Purdue Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 52*

Yuill, T. M., J. O. Iversen, and R. P. Hanson. EVIDENCE FOR ARBOVIRUS INFECTIONS IN A POPULATION OF SNOWSHOE HARES: A POSSIBLE MORTALITY FACTOR. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.)* *Bull. Wildl. Disease Assoc.* 5(3): 248-253, 2 figs. July 1969. *WR 140: 52*
[Univ. Wis., Madison.] Neutralizing antibodies to California encephalitis virus and Silverwater virus were present in the population throughout the study with prevalence ranging from 59% to 97% and from 0% to 68%, respectively. Antibody prevalence rates to western equine encephalomyelitis virus were generally low except for two epizootics during the spring and early summers of 1963 and 1965, when rates of over 80% were observed.--From abstr.

RODENTS--MISCELLANEOUS

Adams, William H., Richard W. Emmons, and Joe E. Brooks. THE CHANGING ECOLOGY OF MURINE (ENDEMIC) TYPHUS IN SOUTHERN CALIFORNIA. *Am. J. Trop. Med. Hyg.* 19 (2): 311-318. 1970. [From Biol. Abstr. 51(15), 1970.] *WR 140: 52*
[Boston City Hosp., Boston, Mass.]

Anderson, Stanley H. EFFECT OF TEMPERATURE ON WATER LOSS AND CO_2 PRODUCTION OF *PEROGNATHUS PARVUS*. *J. Mammal.* 51(3): 619-620. Aug. 1970. *WR 140: 53*
[Kenyon Coll., Gambier, Ohio.]

Andrzejewski, R., and J. Gliwicz. STANDARD METHOD OF DENSITY ESTIMATION OF *MICROTUS ARVALIS*/PALL./FOR THE INVESTIGATION OF ITS PRODUCTIVITY. *Small Mammal Newsl.* (Warsaw) 3(2): 45-53. July 1969. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 53*

Ashby, K. R., J. Harling, and D. Whiles. OBSERVATIONS ON THE DISTRIBUTION AND ACTIVITY OF WATER VOLES *(ARVICOLA AMPHIBIUS AMPHIBIUS)* IN OLD DURHAM BECK, DURHAM. *J. Zool.* 158(2): 209-214. 1969. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 53*

Baker, Charles Edwin. RELATIONSHIP OF CESIUM-137 AND IRON-59 ELIMINATION RATES TO METABOLIC RATES OF SMALL RODENTS. *Ph.D. thesis, Univ. Tenn.* 117 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 53*

Bašenina, N. V. THE ROLE OF ADAPTATION PECULIARITIES OF SEASONAL DIMORPHISM IN THE POPULATION CONTROL OF SMALL RODENTS. *Small Mammal Newsl.* (Warsaw) 2(7): 141-144. June 1968. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 53*

Beumer, Ronald Joseph. RELATIONSHIPS OF TEMPERATURE AND SEASON TO ORGAN WEIGHTS AND BODY COMPOSITION OF HARVEST MICE AND DEER MICE. *Ph.D. thesis, Univ. Ark.* 119 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 53*
"Peromyscus leucopus, P. maniculatus, P. boylii, and *Reithrodontomys fulvescens."*

Boice, Robert, and Janet A. Witter. WATER DEPRIVATION AND ACTIVITY IN *DIPODOMYS ORDII* AND *MERIONES UNGUICULATES*. *J. Mammal.* 51(3): 615-618, 3 figs. Aug. 1970. *WR 140: 53*
[Univ. Mo., Columbia.]

Bovet, Jacques. SEDENTARINESS OF *PEROMYSCUS MANICULATUS* IN ALBERTA GRANARIES. *J. Mammal.* 51(3): 632-634, 1 fig. Aug. 1970. *WR 140: 53*
[Univ. Calgary, Calgary, Alberta, Canada.]

Breed, W. G., and J. R. Clarke. OVULATION AND ASSOCIATED HISTOLOGICAL CHANGES IN THE OVARY FOLLOWING COITUS IN THE VOLE *(MICROTUS AGRESTIS)*. *J. Reprod. Fert.* 22(1): 173-175. June 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 53*

Bronander, Roy Oliver. ELECTROPHORETIC EXAMINATION AND OXYGEN CAPACITIES OF HEMOGLOBINS IN ARIZONA COTTON RATS *(SIGMODON* SP.*)*. *Ph.D. thesis, Univ. Ariz.* 104 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 53*

Brooks, Ronald J., and Edwin M. Banks. A RADIO-TRACKING STUDY OF HOME RANGE BEHAVIOR OF THE COLLARED LEMMING, *DICROSTONYX GROENLANDICUS* (TRAILL). *Am. Zool.* 10(3): 291. Aug. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 53*
Abstract only.

Brower, James Edward. METABOLIC AND THERMAL ADAPTATIONS OF HETEROMYID RODENTS TO THE DESERT. *Ph.D. thesis, Syracuse Univ.* 218 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 53*
Oxygen consumption and thermoregulation of fifteen wild-caught species of pocket mice *(Perognathus)* and kangaroo rats *(Dipodomys)* were studied in the laboratory. Two desert-dwelling species, *Perognathus penicillatus* and *Dipodomys merriami*, have basal metabolic rates which are about 23 to 39% below that of two eastern woodland species, *Napaeozapus insignis* and *Peromyscus maniculatus*.

Brown, Larry N. POPULATION DYNAMICS OF THE WESTERN JUMPING MOUSE *(ZAPUS PRINCEPS)* DURING A FOUR-YEAR STUDY. *J. Mammal.* 51(4): 651-658, 1 fig. Nov. 1970. *WR 140: 53*
[Univ. South Fla., Tampa.]

Bueno, Diego Navia, Carlos Arturo Penaloza Rojas, and Henry Correa Sabogal. CONTROL DE ROEDORES EN LOS MUELLES DE BUENAVENTURA, COLOMBIA. [RAT CONTROL IN BUENAVENTURA, COLOMBIA.] *Bol. Ofic. Sanit. Panamer.* 67(3): 222-232, illus. 1969. [From Biol. Abstr. 51(21), 1970. In Spanish with French, Portuguese, and English summ.] *WR 140: 54*
[San Portuaria, Buenaventura, Colombia.]

Carley, Curtis J., Eugene D. Fleharty, and Michael A. Mares. OCCURRENCE AND ACTIVITY OF *REITHRODONTOMYS MEGALOTIS, MICROTUS OCHROGASTER,* AND *PEROMYSCUS MANICULATUS* AS RECORDED BY A PHOTOGRAPHIC DEVICE. *Southwestern Nat.* 15(2): 209-216, 1 fig. 15 Oct. 1970. *WR 140: 54*
[Bur. Sport Fisheries & Wildl., San Antonio, Texas.]

Christenson, Carl Maurice. SOME FACTORS RELATING TO BEHAVIORAL CHARACTERISTICS OF *MICROTUS OCHROGASTER. Ph.D. thesis, Kans. State Univ.* 113 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 54*
Microtus ochrogaster from a colony maintained in the laboratory were studied to determine (1) natural estrus, (2) ovulation time, (3) total activity patterns of both male and female, and (4) modification of behavioral pattern by estrus, male stimulation, and ovariectomy. It was postulated that dual mechanisms exist for control of estrus and activity, and that these mechanisms, while separate, are related and are probably both located in the hypothalamus.

Connolly, R. A., and R. E. Landstrom. GOPHER DAMAGE TO BURIED CABLE MATERIALS. *Materials Res. & Standards* 9(12): 13-18, 7 figs. Dec. 1969. *WR 140: 54*
[Bell Telephone Lab., Inc., Murray Hill, N.J.] Laboratory tests with the plains pocket gopher *(Geomys bursarius)* were conducted to determine the resistance of various materials and wire and cable configurations to gopher attack. Of the organic materials tested, only epoxy-fiberglass offered protection against these animals. All sheet metals in thicknesses of 0.005 to 0.010 in. (except for aluminum and lead) offered complete protection. The size and core construction of the wire and cable were also found to influence damage.--From abstr.

Cosgrove, G. E., P. B. Dunaway, and J. D. Story. MALIGNANT TUMORS ASSOCIATED WITH SUBCUTANEOUSLY IMPLANTED ^{60}CO RADIOACTIVE WIRES IN *PEROMYSCUS MANICULATUS.* In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 311-314, 7 figs. July 1969. *WR 140: 54*
[Oak Ridge Natl. Lab., Oak Ridge, Tenn.] Cause and effect relation is not provable, but, in view of the hematologic effects and tumors present in tagged animals, caution should be exercised in interpreting data from animals containing radioactive tags for long periods of time.

Crawley, M. C. SOME POPULATION DYNAMICS OF THE BANK VOLE, *CLETHRIONOMYS GLAREOLUS* AND THE WOOD MOUSE, *APODEMUS SYLVATICUS* IN MIXED WOODLAND. *J. Zool.* 160: 71-89. 1970. *WR 140: 54*
[DSIR, P.O. Box 30466, Lower Hutt, New Zealand.]

Delany, M. J. VARIATION AND ECOLOGY OF ISLAND POPULATIONS OF LONG-TAILED FIELDMOUSE *(APODEMUS SYLVATICUS* [L.]). *Mamm. Rev.* (London) 1(2): 33. May 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 54*
Abstract only.

Dewsbury, Donald A. COPULATORY BEHAVIOUR OF RICE RATS *(ORYZOMYS PALUSTRIS). Animal Behaviour* 18(2): 266-275, 5 figs. May 1970. *WR 140: 54*
[Univ. Fla., Gainesville.]

Dewsbury, Donald A. FOOD HOARDING IN RICE RATS AND COTTON RATS. *Psychol. Rept.* 26(1): 174. 1970. [From Biol. Abstr. 51(18), 1970.] *WR 140: 54*
[Univ. Fla., Gainesville.] *"Oryzomys palustris* and *Sigmodon hispidus."*

Dienske, H. NOTES ON DIFFERENCES BETWEEN SOME EXTERNAL AND SKULL CHARACTERS OF *MICROTUS ARVALIS* (PALLAS, 1778) AND OF *MICROTUS AGRESTIS* (LINNAEUS 1761) FROM THE NETHERLANDS. *Zool. Meded. Rijksmus. Natuur. Hist. Leiden* 44(6): 83-108, illus. 1969. [From Biol. Abstr. 51(22), 1970.] *WR 140: 55*
[Rijksmus. Natuur. Hist., Leiden, Netherlands.]

Drożdż, A. DIGESTIBILITY AND UTILIZATION OF NATURAL FOODS IN SMALL RODENTS. *Small Mammal Newsl.* (Warsaw) 2(7): 129-131. June 1968. [From J. Mammal. 51 (4, suppl.), 1970.] *WR 140: 55*

Drummond, D. C. VARIATION IN RODENT POPULATIONS IN RESPONSE TO CONTROL MEASURES. *Mamm. Rev.* (London) 1(2): 35. May 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 55*
Abstract only.

Eldridge, M. J. OBSERVATIONS ON FOOD EATEN BY WOOD MICE *(APODEMUS SYLVATICUS)* AND BANK VOLES *(CLETHRIONOMYS GLAREOLUS)* IN A HEDGE. *J. Zool.* 158(2): 208-209 + 1 pl. 1969. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 55*

Eliseev, L. N., and M. V. Strelkova. [METHODS OF FIELD STUDY OF GREAT GERBILS *(RHOMBOMYS OPIMUS)* IN ESTIMATION OF THE LEVEL OF THEIR INFECTION RATE WITH CUTANEOUS LEISHMANIASIS.] *Med. Parazitol. Parazit. Bolez.* 39(1): 81-88, illus. 1970. [From Biol. Abstr. 51(16), 1970. In Russian with English summ.] *WR 140: 55*
[E. I. Martsinovskii Inst. Med. Parasitol. Trop. Med., Min. Health USSR, Moscow, USSR.]

Evans, D. M. THE EFFECTS OF CHANGES IN NUTRITION ON POPULATIONS OF *MICROTUS AGRESTIS*. *Small Mammal Newsl.* (Warsaw) 2(7): 132. June 1968. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 55*

Fisler, George F. COMMUNICATION SYSTEMS AND ORGANIZATIONAL SYSTEMS IN THREE SPECIES OF RODENTS. *Bull. Southern Calif. Acad. Sci.* 69(1): 43-51. Jan.-Mar. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 55*

Fitzwater, William D., and Ishwar Prakash. OBSERVATIONS ON THE BURROWS, BEHAVIOR AND HOME RANGE OF THE INDIAN DESERT GERBIL, *MERIONES HURRIANAE* JERDON. *Mammalia* 33(4): 598-606, illus. 1969. [From Biol. Abstr. 51(23), 1970.] *WR 140: 55*
[Bur. Sport Fisheries & Wildl., Albuquerque, N. Mex.]

Fleming, Theodore Harris. POPULATION ECOLOGY OF THREE SPECIES OF NEOTROPICAL RODENTS. *Ph.D. thesis, Univ. Mich.* 243 p. 1969. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 55*
"Liomys adspersus, Oryzomys capito, and *Proechimys semispinosus."*

Fleming, Theodore H. NOTES ON THE RODENT FAUNAS OF TWO PANAMANIAN FORESTS. *J. Mammal.* 51(3): 473-490, 3 figs. Aug. 1970. *WR 140: 55*
[Univ. Mo., St. Louis.] Abstract: Twenty-one species of rodents were trapped or observed in two forests in the Panama Canal Zone. Data on the ecology, molt, and food habits of seven species are presented. Among the terrestrial rats and mice, three species *(Liomys adspersus, Oryzomys capito,* and *Proechimys semispinosus)* were common in the Pacific slope forest, whereas two *(Oryzomys capito* and *Proechimys semispinosus)* were common in the Atlantic slope forest. Year-round breeding occurs in eight of nine species; *Liomys adspersus* breeds seasonally. Adults of *L. adspersus* and *P. semispinosus* molt during restricted portions of the year, but there was no apparent synchrony of molt in adults of *Heteromys desmarestianus, Oryzomys capito, Zygodontomys microtinus,* and *Sigmodon hispidus.* Ecological segregation serves to minimize competition among the rodents in both forests.

Gardner, Robert H., Jr., and C. Richard Terman. THE RELATIONSHIP BETWEEN AGE OF GROUPING AND WEIGHT OF SELECTED ORGANS OF PRAIRIE DEERMICE. *Res. Population Ecol.* 12(1): 1-18, 5 figs. June 1970. In English with Japanese summ. *WR 140: 56*

[Coll. William & Mary, Williamsburg, Va.] The data suggest that the weights of the reproductive organs of male and female deermice may be inhibited if they are grouped before sexual maturity occurs. Similar results occurring in natural populations might have a profound effect upon population dynamics.--From summ.

Getz, Lowell L. INFLUENCE OF VEGETATION ON THE LOCAL DISTRIBUTION OF THE MEADOW VOLE IN SOUTHERN WISCONSIN. *Univ. Conn. Occas. Paps. Biol. Sci. Ser.* 1 (4): 213-241. Apr. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 56*

Getz, Lowell L. BOTFLY INFESTATIONS IN *MICROTUS PENNSYLVANICUS* IN SOUTHERN WISCONSIN. *Am. Midland Nat.* 84(1): 187-197, 5 figs. July 1970. *WR 140: 56*

[Univ. Ill., Urbana.] A meadow vole population living in a grass-sedge marsh 1 km from the nearest wooded area was found to be heavily infested with larvae of the botfly, *Cuterebra angustifrons*; 44.4% of the adults and 18.6% of the young and juveniles were infested.--From abstr.

Glenn, Mary Eleanor. WATER RELATIONS IN THREE SPECIES OF DEER MICE *(PEROMYSCUS)*. *Comp. Biochem. Physiol.* 33(2): 231-248. 15 Mar. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 56*

Goszczyński, Jacek. PENETRATION OF AN AREA BY SMALL FOREST RODENTS. *Acta Theriologica* 15(14): 209-222, 2 figs. 30 Aug. 1970. In English with Polish summ. *WR 140: 56*

[Polish Acad. Sci., Turew, Poland.] Investigation was made of the range of penetration of three species: *Apodemus flavicollis, Apodemus agrarius, Clethrionomys glareolus*. By using the stained bait method it was found that daily differences in range of penetration are not statistically significant for the above three species and that the greater part of the individual's range is revealed within one day.--From abstr.

Grant, E. C., J. H. Mackintosh, and C. J. Lerwill. THE EFFECT OF A VISUAL STIMULUS ON THE AGONISTIC BEHAVIOUR OF THE GOLDEN HAMSTER. *Z. Tierpsychol.* 27 (1): 73-77. Feb. 1970. [From J. Mammal. 51(4, suppl.), 1970. In English with German summ.] *WR 140: 56*

Grant, P. R. EXPERIMENTAL STUDIES OF COMPETITIVE INTERACTION IN A TWO-SPECIES SYSTEM. II. THE BEHAVIOUR OF *MICROTUS, PEROMYSCUS* AND *CLETHRIONOMYS* SPECIES. *Animal Behaviour* 18(3): 411-426, [3] figs. + 1 pl. Aug. 1970. *WR 140: 56*

[McGill Univ., Montreal, Quebec, Canada.] *Clethrionomys gapperi, C. glareolus, Peromyscus maniculatus,* and *Microtus pennsylvanicus* were tested in pairs in a dual-habitat arena. When tested with *Clethrionomys* or *Peromyscus, Microtus* occurred significantly more frequently in the grassland half of the arena.--From summ.

Hall, E. Raymond, and Hugh H. Genoways. TAXONOMY OF THE *NEOTOMA ALBIGULA*-GROUP OF WOODRATS IN CENTRAL MEXICO. *J. Mammal.* 51(3): 504-516, 4 figs. Aug. 1970. *WR 140: 56*

[Univ. Kans., Lawrence.]

Hamar, M., and M. Sutova-Hamar. ESTIMATIONS OF RODENT HOME RANGES IN DIFFERENT AGRO-SYSTEMS. *Small Mammal Newsl.* (Warsaw) 2(7): 115-123. June 1968. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 56*

Hamar, M., and A. Tută. ESTIMATION OF THE DENSITY OF *MICROTUS ARVALIS*/PALL./ IN CLOVER FIELDS BY MEANS OF BURIED METAL CYLINDERS. *Small Mammal Newsl.* (Warsaw) 2(7): 123-128. June 1968. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 56*

Hayden, P., and R. G. Lindberg. HYPOXIA-INDUCED TORPOR IN POCKET MICE (GENUS: *PEROGNATHUS*). *Comp. Biochem. Physiol.* 33(1): 167-179, illus. 1970. [From Biol. Abstr. 51(19), 1970.] *WR 140: 57*
[Northrop Corp. Lab., Hawthorne, Calif.]

Hussein, M. Fawzy, R. Boulos, and S. Essa. ACTIVITY CYCLES OF THE RODENT *PSAMMOMYS OBESUS OBESUS* WITH SPECIAL REFERENCE TO TEMPERATURE AND RELATIVE HUMIDITY. *Bull. Fac. Sci.* (Cairo) 42: 171-199. 1969. [From J. Mammal. 51(4, suppl.), 1970. In English with Arabic summ.] *WR 140: 57*

Hussein, M. Fawzy, R. Boulos, and S. Essa. ECOLOGICAL NOTES ON THE RODENT *PSAMMOMYS OBESUS OBESUS* INHABITING MARYUT REGION. *Bull. Fac. Sci.* (Cairo) 42: 201-211. 1969. [From J. Mammal. 51(4, suppl.), 1970. In English with Arabic summ.] *WR 140: 57*

Janion, Stefan M., and Teresa Wierzbowska. TRAPPABILITY OF RODENTS DEPENDING ON POPULATION DENSITY. *Acta Theriologica* 15(13): 199-207, 2 figs. 30 Aug. 1970. In English with Polish summ. *WR 140: 57*
[Inst. Ecol., Polish Acad. Sci., Nowy Świat 72, Warsaw, Poland.] Abstract: When estimating the trappability of rodents in a study area their trap activity was taken into consideration. This activity was expressed by the ratio of the distance between traps to the time interval between these captures. Correlation of this index with the rodents' density showed that the distance traversed is not subject to variation with an increase in the number of individuals (with a constant number of set traps) whereas the time interval between captures increases. Probability of capture, which is the function of density and size of the home range, therefore decreases. An equation is given which expresses how many traps are required in relation to the number of rodents in order to obtain the shortest possible time of waiting for captures.

Jiménez Jiménez, Jorge Victor. COMPARATIVE POST-NATAL GROWTH IN COTTON RATS (GENUS *SIGMODON*). *Ph.D. thesis, Mich. State Univ.* 106 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 57*
Sigmodon hispidus was represented by a population sample having large dimensions and was the largest cotton rat studied. *S. alleni* and *S. fulviventer* were smaller and showed similar growth rates. *S. leucotis* and *S. ochrognathus* were smallest and also showed a similar pattern of growth. The smaller and shorter-tailed species *(S. leucotis* and *S. ochrognathus)* live usually in shallow, rocky soils on sparsely-vegetated slopes whereas the other three species prefer deep soils and abundant grass or shrub cover. Possible reasons for these differences are discussed.

Johnson, Donald R., and Karen L. Groepper. BIOENERGETICS OF NORTH PLAINS RODENTS. *Am. Midland Nat.* 84(2): 537-548. Oct. 1970. *WR 140: 57*
[Univ. Idaho, Moscow.] *"Peromyscus maniculatus, Microtus pennsylvanicus, Clethrionomys gapperi, Zapus hudsonius, Onychomys leucogaster, Mus musculus, Dipodomys ordi, Perognathus fasciatus, Citellus richardsoni,* and *C. tridecemlineatus."*

Keller, Barry L., and Charles J. Krebs. *MICROTUS* POPULATION BIOLOGY; III. REPRODUCTIVE CHANGES IN FLUCTUATING POPULATIONS OF *M. OCHROGASTER* AND *M. PENNSYLVANICUS* IN SOUTHERN INDIANA, 1965-67. *Ecol. Monographs* 40(3): 263-294, 7 figs. Summer 1970. *WR 140: 57*
[Idaho State Univ., Pocatello.]

Khlebnikov, A. I. [WINTER REPRODUCTION OF THE NORTHERN REDBACKED VOLE *(CLETHRIONOMYS RULILUS)* IN THE DARK-CONIFEROUS TAIGA OF THE WEST SAYAN MOUNTAINS.] *Zool. Zhur.* 49(5): 801-802. May 1970. [From J. Mammal. 51(4, suppl.), 1970. In Russian with English summ.] *WR 140: 57*

Kilgore, Delbert L., Jr. THE EFFECTS OF NORTHWARD DISPERSAL ON GROWTH RATE OF YOUNG, SIZE OF YOUNG AT BIRTH, AND LITTER SIZE IN *SIGMODON HISPIDUS*. *Am. Midland Nat.* 84(2): 510-520, 5 figs. Oct. 1970. *WR 140: 58*
[Univ. Kans., Lawrence.] Abstract: Northward dispersal in *Sigmodon hispidus* has not significantly affected early growth rate of young or size of young at birth. But there has been a significant increase in litter size in the northern population. Northern *S. hispidus* have the same size young, but more young per litter than the southern population. Maintenance of the size of young at birth in northern populations may be related, in part, to the development of thermoregulatory capabilities. In the northern population there was seasonal variation in litter size, growth rate (tail length), and size of young at birth (tail length and body weight). Litters of *S. hispidus* produced in cold weather months are significantly smaller than those produced in warm weather months.

Kirkpatrick, R. L., and G. L. Valentine. REPRODUCTION IN CAPTIVE PINE VOLES, *MICROTUS PINETORUM*. *J. Mammal.* 51(4): 779-785. Nov. 1970. *WR 140: 58*
[Va. Polytechnic Inst., Blacksburg.]

Koponen, Terttu. AGE STRUCTURE IN SEDENTARY AND MIGRATORY POPULATIONS OF THE NORWEGIAN LEMMING, *LEMMUS LEMMUS* (L.), AT KILPISJÄRVI IN 1960. *Ann. Zool. Fennici* 7(2): 141-187. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 58*

Kuck, Lonn Eilert. THE INFLUENCE OF POCKET GOPHERS ON REFORESTATION LOSSES. *M.S. thesis, Univ. Idaho.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 58*

Lawler, Timothy Earl. EVOLUTION OF *PEROMYSCUS* ON NORTHERN ISLANDS IN THE GULF OF CALIFORNIA, MEXICO. *Ph.D. thesis, Univ. Mich.* 119 p. 1969. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 58*

Layne, James N. CLIMBING BEHAVIOR OF *PEROMYSCUS FLORIDANUS* AND *PEROMYSCUS GOSSYPINUS*. *J. Mammal.* 51(3): 580-591, 1 fig. Aug. 1970. *WR 140: 58*
[Archbold Biol. Sta., Lake Placid, Fla.] Abstract: Field observations and a laboratory test indicate that *Peromyscus gossypinus* is a more active climber than *P. floridanus*. Subjects conceived and raised in the laboratory tended to perform more poorly on the climbing test than did wild-caught animals. The greater arboreal tendency of *gossypinus* may contribute to its wider distribution and broader habitat tolerance, as compared to *floridanus*, by allowing it to exploit more effectively the resources of the environment. Difference in three-dimensional space utilization of the two species also may serve to reduce competition between them in areas of sympatry. The interspecific variation in climbing activity appears to involve both psychological and morphological adaptations, with the former being of relatively greater importance. Tail length is not correlated with climbing ability in these species. The principal morphological adaptation for climbing appears to be relative development of the plantar tubercles. Two isolated populations of *floridanus* from different habitat types showed greater divergence in climbing activity than *gossypinus* stocks from the same localities and habitats. The difference in climbing tendency of the two *floridanus* populations is believed to be related to the accessibility and general abundance of acorns in their respective habitats.

Lee, Anthony K., and James H. Brown. VARIATIONS IN THE HEMOGLOBIN CONCENTRATIONS OF GREAT BASIN RODENTS. *J. Mammal.* 51(4): 669-674, 2 figs. Nov. 1970. *WR 140: 58*
[Monash Univ., Clayton, Victoria, Australia.]

Lee, C., D. J. Horvath, R. W. Metcalfe, and E. K. Inskeep. OVULATION IN *MICROTUS PENNSYLVANICUS* IN A LABORATORY ENVIRONMENT. *Lab. Animal Care* 20(6): 1098-1102, 2 figs. Dec. 1970. *WR 140: 58*
[W. Va. Univ., Morgantown.]

XUM

Massoia, Elio, and Abel Fornes. CLAVES PARA EL RECONOCIMIENTO DE LOS ROEDORES DEL DELTA DEL PARANÁ (MAMMALIA). [KEYS FOR THE RECOGNITION OF THE RODENTS OF THE DELTA OF THE PARANÁ (MAMMALS).] *Idia* (Buenos Aires) 253: 11-18. Jan. 1969. [From J. Mammal. 51(4, suppl.), 1970. In Spanish.] *WR 140: 59*

Meester, J., and A. F. Hallett. NOTES ON EARLY POSTNATAL DEVELOPMENT IN CERTAIN SOUTHERN AFRICAN MURIDAE AND CRICETIDAE. *J. Mammal.* 51(4): 703-711, 3 figs. Nov. 1970. *WR 140: 59*
[Univ. Pretoria, Pretoria, South Africa.]

Metzgar, Lee Hollis. SOCIAL ORGANIZATION AND POPULATION REGULATION IN THE WOODMOUSE, *PEROMYSCUS LEUCOPUS*. *Ph.D. thesis, Univ. Mich.* 114 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 59*

Migula, Paweł, Władysław Grodziński, Andrzej Jasiński, and Barbara Musiałek. VOLE AND MOUSE PLAGUES IN SOUTH-EASTERN POLAND IN THE YEARS 1945-1967. *Acta Theriologica* 15(16): 233-252, 8 figs. 30 Aug. 1970. In English with Polish summ. *WR 140: 59*
[Jagiellonian Univ., Kraków, Poland.]

Neal, B. R. THE HABITAT DISTRIBUTION AND ACTIVITY OF A RODENT POPULATION IN WESTERN UGANDA, WITH PARTICULAR REFERENCE TO THE EFFECTS OF BURNING. *Rev. Zool. Bot. Africaines* (Brussels) 81(1-2): 29-50. 31 Mar. 1970. [From J. Mammal. 51 (4, suppl.), 1970.] *WR 140: 59*

Nice, Karl Jacob. A SURVEY OF ECTOPARASITES FOUND IN THE NESTS OF *PEROMYSCUS* MICE. *Ph.D. thesis, Univ. Iowa.* 88 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 59*
Ticks, fleas, mites, beetles, and other insects were reported in the nests of *Peromyscus*.

Pelikán, Jaroslav. VARIABILITY OF BODY WEIGHT IN THREE *APODEMUS* SPECIES. *Zool. Listy* 16(3): 199-220. 1967. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 59*

Pelikán, Jaroslav. RESORPTION RATE IN EMBRYOS OF FOUR *APODEMUS* SPECIES. *Zool. Listy* 16(4): 325-342. 1967. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 59*

Petersen, Michael Kempton. COMPETITION BETWEEN THE COTTON RATS, *SIGMODON FULVIVENTER* AND *S. HISPIDUS*. *Ph.D. thesis, Mich. State Univ.* 122 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 59*

Pilyavsky, B. R. [SEASONAL MIGRATIONS OF *MICROTUS AGRESTIS* L. ON SUBALPINE MEADOW OF CHERNOGORY OF THE UKRAINIAN CARPATHIANS. COMMUNICATION II.] *Vestnik Zool.* (Kiev) 1: 54-60. 1970. [From J. Mammal. 51(4, suppl.), 1970. In Russian with English summ.] *WR 140: 59*

Pollard, E., and Judy Relton. HEDGES. V. A STUDY OF SMALL MAMMALS IN HEDGES AND CULTIVATED FIELDS. *J. Appl. Ecol.* 7(3): 549-557, 4 figs. Dec. 1970. *WR 140: 59*
[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdonshire, England.] *"Apodemus sylvaticus* and *Clethrionomys glareolus."*

Quadagno, D. M., J. T. Allin, R. J. Brooks, R. D. St. John, and E. M. Banks. SOME ASPECTS OF THE REPRODUCTIVE BIOLOGY OF *BAIOMYS TAYLORI ATER*. *Am. Midland Nat.* 84(2): 550-551. Oct. 1970. *WR 140: 59*
[Univ. Ill., Urbana.] Abstract: The estrous cycle of *Baiomys taylori ater* was determined by the vaginal smear technique. Total estrous cycle length in days was 7.54±1.75 S.E. 0.23. A gestation period of 20 days was displayed and a delay in implantation of approximately 2 days for each pup nursed concurrently with pregnancy was recorded. Average litter size was found to be 2.49±0.072 (S.E.) from a sample of 58 litters.

Radda, Alfred. UNTERSUCHUNGEN ÜBER DEN AKTIONSRAUM VON *APODEMUS FLAVICOLLIS* (MELCHIOR, 1834). [STUDIES ON THE HOME RANGE OF *APODEMUS FLAVICOLLIS* (MELCHIOR, 1834).] *Zool. Listy* 18(1): 11-22, illus. 1969. [From Biol. Abstr. 51(20), 1970. In German with English summ.] *WR 140: 60*
[Univ. Vienna, Vienna, Austria.]

Reig, Osvaldo A. ECOLOGICAL NOTES ON THE FOSSORIAL OCTODONT RODENT *SPALACOPUS CYANUS* (MOLINA). *J. Mammal.* 51(3): 592-601, 3 figs. Aug. 1970. *WR 140: 60*
[Univ. Central Venezuela, Apartado 59058, Caracas, Venezuela.] Abstract: In the coastal region of central Chile the coruro, *Spalacopus cyanus*, lives in large populations consisting of many small, nomadic colonies. One colony contained 15 members belonging to no less than three generations. A colony of coruros occupies a common burrow system and apparently wanders continuously in search for food. Coruros feed primarily, if not exclusively, on the tubers and underground stems of the lily, *Leucocryne ixioides*. *S. cyanus* has a higher metabolic rate than similar-sized fossorial species of *Ctenomys*. In February, adult males were sexually active and two of six adult females were pregnant, each bearing three small fetuses.

Ryszkowski, Lech, and Janusz Truszkowski. SURVIVAL OF UNWEANED AND JUVENILE BANK VOLES UNDER FIELD CONDITIONS. *Acta Theriologica* 15(15): 223-232, 3 figs. 30 Aug. 1970. In English with Polish summ. *WR 140: 60*
[Polish Acad. Sci., Turew, Poland.] Survival amounted to 47-61% for *Clethrionomys glareolus*.

Sadleir, R. M. F. S. THE ESTABLISHMENT OF A DOMINANCE RANK ORDER IN MALE *PEROMYSCUS MANICULATUS* AND ITS STABILITY WITH TIME. *Animal Behaviour* 18(1): 55-59, 1 fig. Feb. 1970. *WR 140: 60*
[Simon Fraser Univ., Burnaby, Canada.] Summary: This study has demonstrated that a sample of eight wild male *Peromyscus maniculatus*, when repeatedly matched in an arena situation against each other, showed a virtually constant single-line ranking of aggressiveness which remained stable for 1 month.

Salter, David Wilson. A COMPARISON OF VARIOUS BLOOD PROPERTIES OF DIFFERENT ALTITUDINAL AND GEOGRAPHICAL POPULATIONS OF ARIZONA POCKET GOPHERS *(THOMOMYS)*. *Ph.D. thesis, Univ. Ariz.* 89 p. 1970. [From Dissertation Abstr. Intern. 31 (5B), 1970.] *WR 140: 60*

Sealander, John A. EFFECT OF SEASON ON PLASMA AND URINARY PROTEINS OF THE NORTHERN RED-BACKED VOLE *CLETHRIONOMYS RUTILUS*. *Physiol. Zool.* 42(3): 275-287, illus. 1969. [From Biol. Abstr. 51(15), 1970.] *WR 140: 60*
[Univ. Ark., Fayetteville.]

Semenov-Tyan-Shanskii, O. I. [POPULATION CYCLES IN THE FOREST VOLES *(CLETHRIONOMYS)*.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 75(2): 11-26, illus. 1970. [From Biol. Abstr. 51(23), 1970. In Russian with English summ.] *WR 140: 60*

Sewell, Gillian D. ULTRASONIC COMMUNICATION IN RODENTS. *Nature* 227(5256): 410. 25 July 1970. *WR 140: 60*
[Kings Coll. London, London, England.] "A clear demonstration that the ultrasonic calls of *Apodemus sylvaticus* babies do have communication value to the mothers of this species."

Smith, F. J. LA RECHERCHE SUR LES RATS DANS LES ATOLLS. [RESEARCH ON RATS IN THE ATOLLS.] *Oleagineux* 25(3): 147-152, illus. 1970. [From Biol. Abstr. 51(22), 1970. In French with Spanish and English summ.] *WR 140: 60*

XUM

Storm, G. L., and Glen C. Sanderson. EFFECT OF MESTRANOL AND DIETHYLSTILBESTROL ON CAPTIVE VOLES. *J. Wildl. Mgmt.* 34(4): 835-843. Oct. 1970. *WR 140: 61*

[Univ. Minn., Minneapolis.] Abstract: The ovaries of young female voles *(Microtus pennsylvanicus)*, which nursed when their mothers were treated orally with 3.3 mg/Kg of mestranol (17-ethynyl-3-methoxyestra-1,3,5(10)-trien-17-ol) were significantly *(P<0.05)* lighter than those of controls. Diethylstilbestrol (DES) ingested by male voles for 14 days at the rate of 1.5 mg/day/animal (total dosage, 626.1 mg/Kg) or mestranol for 3 days at a dose of 0.19 mg/day/animal (total dosage, 17.1 mg/Kg) resulted in a decrease in testis weight. Ingestion of either compound on 1 day or once per week for 2 weeks, at higher doses, did not affect the weight of the testis. Six groups of female voles treated with mestranol had heavier uteri than did controls. Kidneys from voles treated with DES were heavier than kidneys from controls, with differences significant *(P<0.05)* for three of the five groups. Kidneys of mestranol-treated voles tended to be heavier than those of controls but the differences were not significant. The adrenals of voles treated with mestranol or DES were significantly *(P<0.05)* heavier than those of controls in 5 of 15 experiments. Food containing 0.001% mestranol was detected by voles when offered at intervals of 1 or 3 days. Daily consumption of diets containing 0.0002 or 0.0005% mestranol, when offered at 3- or 7-day intervals, was similar for treated and control groups.

Stormer, Fred A. FACTORS AFFECTING THE DISTRIBUTION AND ABUNDANCE OF *PEROMYSCUS LEUCOPUS* AND *CLETHRIONOMYS GAPPERI*--MIXED OAK FORESTS OF CENTRAL PENNSYLVANIA. *M.S. thesis, Pa. State Univ.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 61*

Svendsen, Gerald E. NOTES ON THE ECOLOGY OF THE HARVEST MOUSE, *REITHRODONTOMYS MEGALOTIS*, IN SOUTHWESTERN WISCONSIN. *Wis. Acad. Sci. Arts Lett.* 58: 163-166. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 61*

Swain, Charles F. SEA-LEVEL AND HIGH-ALTITUDE BREEDING COLONIES OF *PEROMYSCUS MANICULATUS SONORIENSIS*. *Am. J. Physiol.* 218(5): 1263-1266. 1970. [From Biol. Abstr. 51(20), 1970.] *WR 140: 61*

[Univ. Calif., Berkeley.]

Tast, Johan. INFLUENCE OF THE ROOT VOLE, *MICROTUS OECONOMUS* (PALLAS), UPON THE HABITAT SELECTION OF THE FIELD VOLE, *MICROTUS AGRESTIS* (L.) IN NORTHERN FINLAND. *Ann. Acad. Sci. Fenn. Ser. A IV Biol.* 136: 3-23, illus. 1968. [From Biol. Abstr. 51(16), 1970.] *WR 140: 61*

[Univ. Helsinki, Helsinki, Finland.]

Teichner, Warren H., Richard Waranch, Marie LoPiccolo, and Carolyn Campbell. MODE OF ACTION OF RODENT REPELLENTS AND ATTRACTANTS. *U.S. Army Natick Labs.* (Natick, Mass.) *Tech. Rept.* 70-69-PR. viii + 161 p., [44] figs. Sept. 1969. *WR 140: 61*

[Northeastern Univ., Boston, Mass.] Abstract: The mode of action of rat repellents was investigated in a series of experiments concerned with food consumption, olfactory sensitivity and discrimination, adaptation and habituation, and performance. A variety of chemical repellents were used both in the animal's food and in the air. Comparisons were also made among laboratory strains and the Norway rat (both wild and tame), with and without lesions in the olfactory bulb. It was concluded that the odor of a chemical makes little or no contribution to the repellency of a chemical or to its value as a deterrent except when it has a signalling value from association with a painful taste or when it is a novel stimulus. Additional conclusions relate to methodology for testing the effectiveness of repellents, theory, and needs for future research.

Thiessen, D. D., S. L. Blum, and G. Lindzey. A SCENT MARKING RESPONSE ASSOCIATED WITH THE VENTRAL SEBACEOUS GLAND OF THE MONGOLIAN GERBIL *(MERIONES UNGUICULATUS). Animal Behaviour* 18(1): 26-30, 2 figs. Feb. 1970. *WR 140: 62*
[Univ. Texas, Austin.] Summary: The Mongolian gerbil regularly marks objects in an open field by rubbing them with a mid-ventral sebaceous scent gland. A method and apparatus useful for the study of this response are described. The marking and gland size are sexually dimorphic, with the male marking about twice as frequently as the female and possessing a gland roughly twice the size. Ventral marking in males is positively correlated with urination and defecation, and it is suggested that all three of these activities may in some situations be territorial scent marking responses.

Tinkle, David, and Wallace Harmon. SEASONAL SURFACE ACTIVITY IN *PEROGNATHUS CALIFORNICUS. Am. Midland Nat.* 84(1): 257-259, 1 fig. July 1970. *WR 140: 62*
[Fresno State Coll., Fresno, Calif.] Abstract: Trapping data, collected over a 15-month period give little evidence of surface activity among *Perognathus californicus* during the winter months. The absence of this species from winter trapping records provides circumstantial evidence for the occurrence of hibernation in *P. californicus*.

Todd, K. S., Jr., and C. A. Tryon, Jr. *EIMERIA FITZGERALDI* N. SP. FROM THE NORTHERN POCKET GOPHER, *THOMOMYS TALPOIDES. J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(2): 107-108, 1 fig. Apr. 1970. *WR 140: 62*
[Univ. Ill., Urbana.]

Valentine, G. L., and R. L. Kirkpatrick. SEASONAL CHANGES IN REPRODUCTIVE AND RELATED ORGANS IN THE PINE VOLE, *MICROTUS PINETORUM*, IN SOUTHWESTERN VIRGINIA. *J. Mammal.* 51(3): 553-560. Aug. 1970. *WR 140: 62*
[Va. Polytechnic Inst., Blacksburg.] Abstract: Fifteen adult pine voles of each sex were trapped each month for a period of 1 year beginning in June 1967 and ending in May 1968. Measures of reproductive activity and various organ weights were obtained each month. Pregnant females were found only from April through October with peak numbers of pregnancies occurring in July and August. The average number of fetuses per pregnant female was 1.9. A few females had corpora lutea on their ovaries in all months except January. Weights of the ovaries, uteri, clitoral glands, testes, seminal vesicles, and preputial glands were all greater during the season of reproduction than during the remaining 5 months. Thymic and adrenal weights were greatest in early autumn.

Varona, Luis S. NUEVA ESPECIE Y NUEVO SUBGÉNERO DE *CAPROMYS* (RODENTIA: CAVIOMORPHA) DE CUBA. [A NEW SPECIES AND NEW SUBGENUS OF *CAPROMYS* OF CUBA.] *Poeyana Ser. A* no. 73. p. 1-18, 4 figs. 30 July 1970. In Spanish with English synopsis. *WR 140: 62*
[Inst. Biol., Acad. Sci. Cuba, Havana, Cuba.] *"Capromys auritus."*

Varona, Luis S. DESCRIPCIÓN DE UNA NUEVA ESPECIE DE *CAPROMYS* DEL SUR DE CUBA (RODENTIA: CAVIOMORPHA). [DESCRIPTION OF A NEW SPECIES OF *CAPROMYS* FROM SOUTH OF CUBA.] *Poeyana Ser. A* no. 74. p. 1-15, 4 figs. 30 July 1970. In Spanish with English synopsis. *WR 140: 62*
"Capromys garridoi."

Visinescu, Niculina. [OPTIMUM TEMPERATURE AND ITS SEASONAL VARIATIONS IN *APODEMUS SYLVATICUS* AND *CLETHRIONOMYS GLAREOLUS.*] *Comun. Zool.* (Bucharest) 1969: 23-28. 1969. [From J. Mammal. 51(4, suppl.), 1970. In Romanian with Russian and English summ.] *WR 140: 62*

Watts, C. H. S. THE FOODS EATEN BY SOME AUSTRALIAN DESERT RODENTS. *Field Nat. Soc. South Australia* 44(4): 71-74. June 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 62*

Wendland, Victor. VIKARIANZ BEI DER NORDISCHEN WUEHLMAUS *(MICROTUS OECONOMUS)* UND DER ERDMAUS, *MICROTIS AGRESTIS*, IM WESTBERLINER RAUM. [*MICROTUS OECONOMUS* AND *MICROTUS AGRESTIS* IN THE AREA OF WEST BERLIN.] *Z. Säugetierk.* 35(1): 51-56. 1970. [From Biol. Abstr. 51(24), 1970. In German with English summ.] *WR 140: 63*
[Ringbahnstrasse 79, Berlin-Tempelhof, Germany.]

Whitney, Elinor, Albert P. Roz, and George A. Rayner. TWO VIRUSES ISOLATED FROM RODENTS *(CLETHRIONOMYS GAPPERI* AND *MICROTUS PENNSYLVANICUS)* TRAPPED IN ST. LAWRENCE COUNTY, NEW YORK. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 48-55. Jan. 1970. *WR 140: 63*
[N.Y. State Dept Health, Albany.] Four strains of *C. gapperi* virus were isolated from 3 *Clethrionomys gapperi* and 47 strains of *Microtus* virus from 15 *Microtus pennsylvanicus* and 1 *Mus musculus*.--From abstr.

Yang, Kee-chum, Charles J. Krebs, and Barry L. Keller. SEQUENTIAL LIVE-TRAPPING AND SNAP-TRAPPING STUDIES OF *MICROTUS* POPULATIONS. *J. Mammal.* 51(3): 517-526, 2 figs. Aug. 1970. *WR 140: 63*
[Ind. Univ., Bloomington.] Abstract: Four populations of *Microtus ochrogaster* and *M. pennsylvanicus* were censused by live- and snap-trapping methods in southern Indiana grasslands from March to December 1967. On each area a quadrat was live-trapped for 2 weeks and then immediately snap-trapped for 3 days. Population size was estimated using the Petersen Method. Approximately 25 to 35% of the *Microtus* population was removed by this snap-trapping procedure, and the snap-trap index was closely related to the estimated density. Snap-trap lines tended to remove voles which lived closer to these lines, but this effect was not absolute. All weight classes of *M. ochrogaster* seemed equally susceptible to either live traps or snap traps. Juveniles are under-represented in both live- and snap-trapped samples. Both sexes of *M. ochrogaster* seemed to be caught as readily by live traps as by snap traps.

Zervanos, Stamatis M. EFFECTS OF PHOTOPERIOD ON THE DAILY ACTIVITY OF THE ALLEGHENY WOOD RAT *(NEOTOMA FLORIDANA)*. *Mammalia* 33(3): 509-515, illus. 1969. [From Biol. Abstr. 51(15), 1970. In English with French summ.] *WR 140: 63*
[Pa. State Univ., University Park.]

RATTUS & MUS

Garrison, Melvyn V., and Charles P. Breidenstein. DIGESTION OF SUGARCANE BY THE POLYNESIAN RAT. *J. Wildl. Mgmt.* 34(3): 520-522, 1 fig. July 1970. *WR 140: 63*
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: Polynesian rats *(Rattus exulans)* were fed semi-purified rations containing varying levels of sugarcane *(Saccharum officinarum)* pith in order to determine digestibility. As the percentage of sugarcane pith increased in the rations, the dry matter digestibility decreased significantly ($P<0.05$).

Gwynn, G. Wayne, and Stanley M. Kurtz. ACCEPTABILITY AND EFFICACY OF AN ANTIFERTILITY AGENT IN WILD NORWAY RATS. *J. Wildl. Mgmt.* 34(3): 514-519. July 1970. *WR 140: 63*
[Univ. Mich., Ann Arbor.] Abstract: Wild Norway rats *(Rattus norvegicus)* did not discriminate against diets containing the estrogen antagonist, 1-[2-[p-[α(p-methoxyphenyl)-β-nitrostyryl]phenoxy]ethyl]pyrrolidine monocitrate, at concentrations of 1.2 µg/g and 3.0 µg/g of food when offered a free choice between treated and untreated rations. These drug concentrations resulted in average dose levels of 15 and 35 µg/rat/day. These levels were sufficient to prevent pregnancy in both groups of 7 rats each, compared with a pregnancy rate of 5 out of 7 in the untreated rats.

Heisch, R. B. URBAN *RATTUS* AS THE MAIN RESERVOIR OF MURINE TYPHUS IN KENYA. *J. Trop. Med. Hyg.* 72(8): 195-196. 1969. [From Biol. Abstr. 51(16), 1970.] *WR 140: 64*
[London Sch. Hyg. & Trop. Med., London, England.]

Kennelly, James J., Melvyn V. Garrison, and Brad E. Johns. LABORATORY STUDIES OF THE EFFECT OF U-5897 ON THE REPRODUCTION OF WILD MALE RATS. *J. Wildl. Mgmt.* 34(3): 508-513, 2 figs. July 1970. *WR 140: 64*
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: The effects of U-5897 (3-chloro-1,2-propanediol), a male chemosterilant that acts by inducing epididymal lesions, were tested in the laboratory on ricefield rats *(Rattus argentiventer)*, Polynesian rats *(R. exulans)*, black rats *(R. rattus)*, Norway rats *(R. norvegicus)*, and laboratory rats (Long-Evans strain). For each species, seven treatment groups of five males each were given single oral doses ranging from 0-300 mg/kg. No lesions were induced in ricefield and Polynesian rats at any dose level. Some Norway and laboratory rats developed lesions at doses of 50 mg/kg, and all developed them at 100 mg/kg and above. Black rats developed lesions at 100 mg/kg, and higher, but the response was incomplete; at least one male at each dose level failed to develop lesions. Some Norway, laboratory, and Polynesian rats died from doses of 200 mg/kg and higher.

Lim, Boo-Liat. DISTRIBUTION, RELATIVE ABUNDANCE, FOOD HABITS, AND PARASITE PATTERNS OF GIANT RATS *(RATTUS)* IN WEST MALAYSIA. *J. Mammal.* 51(4): 730-740, 3 figs. Nov. 1970. *WR 140: 64*
[Inst. Med. Res., Kuala Lumpur, Malaysia.] *"Rattus sabanus, R. edwardsi, R. bowersii,* and *R. muelleri."*

Murrell, K. D., and M. D. Cates. SEASONAL PERIODICITY OF ECTOPARASITES OF *RATTUS RATTUS TANEZUMI* TEMMINCK FROM TAIWAN. *J. Med. Entomol.* 7(3): 367-370, 1 fig. 30 May 1970. *WR 140: 64*
[Univ. Chicago, Chicago, Ill.] Abstract: The population dynamics of rat ectoparasites on Taiwan was studied. During 18 months of observation, the flea, louse, and mite populations exhibited definite seasonal periodicities. The abundance of all 3 populations was greatest during the cool fall and winter months and was least during the hot summer months. Although the relationship between ectoparasite numbers and temperature was obvious it was not clear whether this climatic effect was direct or indirect.

Schiffman, H. R., Richard Lore, John Passafiume, and Robert Neeb. ROLE OF VIBRISSAE FOR DEPTH PERCEPTION IN THE RAT *(RATTUS NORVEGICUS)*. *Animal Behaviour* 18(2): 290-292. May 1970. *WR 140: 64*
[Rutgers Univ., New Brunswick, N.J.]

Schisla, R. M., J. D. Hinchen, and W. C. Hammann. NEW RODENTICIDE, 'MR-100', CONTAINING A TASTE ENHANCER. *Nature* 228(5277): 1229-1230, 3 figs. 19 Dec. 1970. *WR 140: 64*
[Montsanto Co., 800 N. Lindbergh Blvd., St. Louis, Mo.] *"Rattus rattus, R. norvegicus,* and *Mus musculus."*

Tomich, P. Quentin. MOVEMENT PATTERNS OF FIELD RODENTS IN HAWAII. *Pacific Sci.* 24(2): 195-234, 12 figs. Apr. 1970. *WR 140: 64*
[Plague Res. Unit, State Dept. Health, Honokaa, Hawaii.] Four rodents, *Mus musculus, Rattus exulans, R. rattus,* and *R. norvegicus*, were investigated during 1959-64 as related to plague organisms. Fluctuations in population densities are related to season, to cultural practices for sugar cane, and to the movement and home range of rodents. Significant differences in distances moved are derived between species and between sexes within species, in time and in different habitats. Home range and local movement of the field rodents of Hawaii have many parallels with those of the same species as reported in other regions of the world and in other cultural surroundings, but direct comparisons are seldom possible because of differences in methods used and in environmental conditions. --From abstr.

Uchida, Teru Aki. RAT-CONTROL PROCEDURES ON THE PACIFIC ISLANDS, WITH SPECIAL REFERENCE TO THE EFFICIENCY OF BIOLOGICAL CONTROL AGENTS. I. APPRAISAL OF THE MONITOR LIZARD, *VARANUS INDICUS* (DAUDIN), AS A RAT-CONTROL AGENT ON IFALUK, WESTERN CAROLINE ISLANDS. *J. Fac. Agr. Kyushu Univ.* 15(3): 311-330, illus. 1969. [From Biol. Abstr. 51(16), 1970. In English with French summ.] *WR 140: 65*
[Kyushu Univ., Kyushu, Fukuoka, Japan.] *"Rattus rattus* and *R. exulans."*

Wheeler, S. H. THE ECOLOGY OF *RATTUS FUSCIPES GREYI* ON KANGAROO ISLAND. *Austral. Mamm. Soc. Bull.* 2(7): 196. May 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 65*
Abstract only.

SCIURIDS

Avenoso, Alfred Charles. SELECTION AND PROCESSING OF NUTS BY THE FLYING SQUIRREL, *GLAUCOMYS VOLANS*. *Ph.D. thesis, Univ. Fla.* 126 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 65*

Barash, David Philip. THE SOCIAL BIOLOGY OF THE OLYMPIC MARMOT. *Ph.D. thesis, Univ. Wis.* 233 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 65*
"Marmota olympus."

Barkalow, F. S., Jr., R. B. Hamilton, and R. F. Soots, Jr. THE VITAL STATISTICS OF AN UNEXPLOITED GRAY SQUIRREL POPULATION. *J. Wildl. Mgmt.* 34(3): 489-500, 1 fig. July 1970. *WR 140: 65*
[N.C. State Univ., Raleigh.] Abstract: The characteristics of an unexploited population of gray squirrels *(Sciurus carolinensis)* in North Carolina were studied over the period 1956-1964. The research area totalled 400 acres and was a part of a 5,200 acre continuous woodland. Density and survival information were obtained from an intensive tagging and recapturing program utilizing live traps and nest boxes. Life table and survival data were derived from the recapture records of 1,769 marked squirrels, 1,023 of which were of known age. Survival estimates are minimal because dispersal movements are included in mortality. An average annual dispersal rate of 14.5% is suggested. The mean value for survival during the first year was calculated as 0.26. No significant difference *(P>0.05)* was detected between the recapture rates of spring and summer litters. The high rate of mortality (0.75) in the first year is counterbalanced by a high survival rate (0.52) in the adult categories. Adult females had a slightly higher survival rate than males (0.59 vs 0.44). Mean life expectancy at birth was approximately 1 year (0.99). In the adult age groups the mean life expectancy increased from 1.82 years in the 1-2-year cohort to a high of 2.41 years in the 2-3-year cohort and remained above 1 year until the 7-8-year cohort when the mean life expectancy fell to 0.50 years. Cohort longevity was 6.4 years on a 99.5% turnover basis. Ecological longevity was about 9 years.

Beg, Mirza Azhar. HABITATS, FOOD HABITS, AND POPULATION DYNAMICS OF THE RED-TAILED CHIPMUNK, *EUTAMIAS RUFICAUDUS*, IN WESTERN MONTANA. *Ph.D. thesis, Univ. Mont.* 167 p. 1969. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 65*

Bond, Elihu. HEPATOMA AND ARTERIOSCLEROSIS IN A WOODCHUCK. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 418-421, 6 figs. Oct. 1970. *WR 140: 65*
[New York Univ. Med. Center, New York, N.Y.]

Brand, Leonard Roy. VOCALIZATIONS AND BEHAVIOR OF THE CHIPMUNKS (GENUS *EUTAMIAS*) IN CALIFORNIA. *Ph.D. thesis, Cornell Univ.* 137 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 65*

Bredahl, Edward Arlan. A STUDY OF WATER BALANCE IN HIBERNATING AND NON-HIBERNATING *CITELLUS FRANKLINII*. *Ph.D. thesis, Univ. N. Dak.* 112 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 66*

The normal pattern of water balance, effect of dietary variation on water consumption and water deprivation, and aspects of water balance during hibernation were studied.

Cameron, Duncan MacLean, Jr. THE POPULATION BIOLOGY AND INTERACTIONS OF TWO SCIURID RODENTS *(EUTAMIAS AMOENUS* AND *CITELLUS LATERALIS)* IN NORTHEASTERN CALIFORNIA. *Ph.D. thesis, Univ. Calif.* 500 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 66*

Population dynamics, movement phenomena, hibernation patterns, and interactions of the golden-mantled ground squirrel *(Citellus lateralis)* and the yellow-pine chipmunk *(Eutamias amoenus)* were examined. It has been shown in this study that there are niche differences, albeit great similarities as well, and that the golden-mantled ground squirrel occupies the narrower superior niche. There was less interspecific interaction than intraspecific interaction during times when food was abundant; the converse was true when food resources were low.

Clark, Tim W., and R. H. Denniston. ON THE DESCRIPTIVE ETHOLOGY OF RICHARDSON'S GROUND SQUIRREL. *Southwestern Nat.* 15(2): 193-200, 1 fig. 15 Oct. 1970. *WR 140: 66*

[Wis. State Univ., Medford.] Abstract: Descriptive ethology of Richardson's ground squirrel *(Spermophilus richardsoni elegans)* was studied for two annual above-ground activity cycles (1967 and 1968). Richardson's ground squirrels studied were located in the Laramie Basin, Albany County, Wyoming. Observed behavior patterns were compared to those of the Uinta ground squirrel *(S. armatus)* as reported by Balph and Stokes (1963). The postural components of the behavior and circumstances under which these occur appear to be relatively similar between the two ground squirrels. Locomotion, feeding, elimination, grooming, tail-flicking, agonistic, sexual, juvenile behaviors, and general patterns of interspecific behavior seem to be comparable between the two species. However, certain behaviors were noted in Richardson's ground squirrels that were not reported in the Uinta ground squirrel, such as a type of digging and gathering nest materials. Study results showed that relative differences in behavior would probably be more definitive than absolute differences.

Cross, Stephen Paul. BEHAVIORAL ASPECTS OF WESTERN GRAY SQUIRREL ECOLOGY. *Ph.D. thesis, Univ. Ariz.* 185 p. 1969. [From Dissertation Abstr. Intern. 30 (9B), 1970.] *WR 140: 66*

The role of behavior of the western gray squirrel, *Sciurus griseus*, in relation to the basic ecology of the species was investigated during a 36 month period. Data were collected regarding population characteristics, daily activity patterns, egocentric behavior, reproductive behavior, movements and social behavior. Two separate populations were studied which gave a comparison of data for two different densities.

Davis, Donald Wayne. THE BEHAVIOR AND POPULATION DYNAMICS OF THE RED SQUIRREL *(TAMIASCIURUS HUDSONICUS)* IN SASKATCHEWAN. *Ph.D. thesis, Univ. Ark.* 229 p. 1969. [From Dissertation Abstr. Intern. 30(2B), 1969.] *WR 140: 66*

Downhower, Jerry F., and J. Donald Pauley. AUTOMATED RECORDINGS OF BODY TEMPERATURE FROM FREE-RANGING YELLOW-BELLIED MARMOTS. *J. Wildl. Mgmt.* 34(3): 639-641, 4 figs. July 1970. *WR 140: 66*

[Cornell Univ., Ithaca, N.Y.] Abstract: A simple, portable system for the automatic collection and storage of radio-telemetry data is described. Data on the deep body temperatures of two yellow-bellied marmots *(Marmota flaviventris)* are reported for 3 days.

XUM

Drabek, Charles Martin. ETHOECOLOGY OF THE ROUND-TAILED GROUND SQUIRREL, *SPERMOPHILUS TERETICAUDUS*. *Ph.D. thesis, Univ. Ariz.* 119 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 67*

Evans, James Eugene. A STUDY OF THE TAXONOMIC STATUS AND THE ECOLOGY OF THE FOREST SQUIRREL IN WEST VIRGINIA. *M.S. thesis, W. Va. Univ.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 67*

Fisher, Edward W., and Alfred E. Perry. ESTIMATING AGES OF GRAY SQUIRRELS BY LENS-WEIGHTS. *J. Wildl. Mgmt.* 34(4): 825-828, 2 figs. Oct. 1970. *WR 140: 67*
[Averett Coll., Danville, Va.] Abstract: The lens-weight technique was used to estimate the ages of 885 gray squirrels *(Sciurus carolinensis)* during 1965 and 1966. This method was compared with the X-ray method of aging. Agreement between the two methods indicated that the lens-weight method, when used alone, is sufficient aging criterion for separation of juveniles and adults and for estimating year classes of adult gray squirrels. Statistical analysis revealed no significant difference between lenses of individual squirrels or between lenses of male and female squirrels of approximately the same estimated age.

Flyger, Vagn. URBAN GRAY SQUIRRELS--PROBLEMS, MANAGEMENT, AND COMPARISONS WITH FOREST POPULATIONS. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 107-113. 1970. *WR 140: 67*
[Univ. Md., College Park.]

Hall, Kent Douglas. EFFECTS OF LIGHT AND TEMPERATURE ON SEASONAL EVENTS IN THE LIFE CYCLE OF THE 13-LINED GROUND SQUIRREL, *CITELLUS TRIDECEMLINEATUS*. *Ph.D. thesis, Univ. Kans.* 77 p. 1969. [From Dissertation Abstr. Intern. 30 (6B), 1969.] *WR 140: 67*

Jones, Robert E. ANALYSIS OF A DELAWARE GRAY SQUIRREL POPULATION. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 97-106. 1970. *WR 140: 67*
[Univ. Del., Newark.]

Joseph, Thomas. THE COCCIDIA OF THE GRAY SQUIRREL *SCIURUS CAROLINENSIS* WITH DESCRIPTIONS OF TWO NEW SPECIES. *Ph.D. thesis, Boston Univ.* 230 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 67*

Kemp, Gerald A., and Lloyd B. Keith. DYNAMICS AND REGULATION OF RED SQUIRREL *(TAMIASCIURUS HUDSONICUS)* POPULATIONS. *Ecology* 51(5): 763-779, 3 figs. Late Summer 1970. *WR 140: 67*
[Univ. Wis., Madison.] Yearly differences in reproductive output were caused principally by changing ovulation and pregnancy rates. Red squirrel territories appeared to be of two distinct types: (1) defended winter food caches which were subsequently abandoned during the summer, and (2) "prime" territories in which a specific area was defended year round. A statistically significant correlation was found between white spruce cone crops and red squirrel populations in Alberta as indexed by annual fur harvests. The negative correlation between cone crops in late summer and rainfall during summer of the preceding year was almost significant.--From abstr. Courtesy/ Paul A. Stewart.

Lockner, F. Russell. AN ANALYSIS OF FEEDING BEHAVIOR IN THE RED TAILED CHIPMUNK, *EUTAMIAS RUFICAUDUS*. *Ph.D. thesis, Univ. Mont.* 168 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 67*

Marsh, Rex E., Walter E. Howard, and Steve D. Palmateer. EFFECTS OF ODORS OF RODENTICIDES AND ADHERENTS ON ATTRACTIVENESS OF OATS TO GROUND SQUIRRELS. *J. Wildl. Mgmt.* 34(4): 821-825. Oct. 1970. *WR 140: 67*
[Univ. Calif., Davis.] Abstract: When olfactory tests were conducted with 18 Douglas ground squirrels *(Spermophilus beecheyi douglasii)*, strychnine and

sodium fluoroacetate (1080) did not produce response-stimulating odors, whereas zinc phosphide, lecithin-mineral oil, and starch paste improved the attractiveness of a bait called "squirrel oat-groats." The attractiveness of oats was slightly increased with the addition of Rhoplex AC-33 and slightly decreased with Dow Latex 512-R.

McKinney, Ted D., and John J. Christian. INCIDENCE AND EFFECTS OF BOTFLY PARASITISM IN THE EASTERN CHIPMUNK. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 140-143. July 1970. *WR 140: 68*

[Albert Einstein Med. Center Res. Labs, Philadelphia, Pa.] Abstract: Comparison of bot-infested and bot-free chipmunks collected during 1966-1969 revealed no significant differences in rate of infestation among sex-age classes. Splenomegaly and thymic involution were associated with bot infestation, and adrenal weights were greater in bot-infested adult females. Parasitized animals of all sex-age classes tended to be larger than non-parasitized individuals, and reproductive organs were heavier in infested adults of both sexes. Evidence of bot-induced mortality was not found, but results indicate the possibility of differential loss of bot-infested animals from the population.

Millar, John S. VARIATIONS IN FECUNDITY OF THE RED SQUIRREL, *TAMIASCIURUS HUDSONICUS* (ERXLEBEN). *Canadian J. Zool.* 48(5): 1055-1058. Sept. 1970. *WR 140: 68*

[Univ. Alberta, Edmonton, Alberta, Canada.] Abstract: Ovulation rates, preimplantation losses, and postimplantation losses of red squirrels in southern British Columbia were examined in relation to age, area, and year, and related to population density and food supply. Ovulation rates were extremely variable, and appeared to be influenced by the food supply. Preimplantation losses were higher in yearlings (22.7%) than in adults (7.4%), and totalled 11.3% of all ova shed. Postimplantation losses totalled 7.7% of all implanted embryos.

Muul, Illar. INTRA- AND INTER-FAMILIAL BEHAVIOUR OF *GLAUCOMYS VOLANS* (RODENTIA) FOLLOWING PARTURITION. *Animal Behaviour* 18(1): 20-25 + 2 pls. Feb. 1970. *WR 140: 68*

[Inst. Med. Res., Kuala Lumpur, Malaysia.] Experimental analysis and observational data on retrieving behavior in female flying squirrels, *Glaucomys volans*, indicate that the retrieving drive is very strong, that females prior to 40 days post partum do not distinguish between their own young and those of other females (provided the babies are less than 40 days old), and that extra-familial young are usually attacked after 40 days post partum. Younger babies were retrieved by females more frequently than older ones (when the age difference was 18 to 19 days), regardless of whether they were intra- or extra-familial. Odor is important in the female's ability to distinguish (1) between her own and extra-familial young over 40 days old, and (2) extra-familial young of any age after 40 days post partum. Females that had litters during the annual intensive food storing period retrieved nuts, when these were presented in lieu of babies, and placed them in their nests. Females sometimes 'stored' their babies when these were presented after a sequence of nut retrieving.--From summ.

Nixon, Charles M. INSECTS AS FOOD FOR JUVENILE GRAY SQUIRRELS. *Am. Midland Nat.* 84(1): 283. July 1970. *WR 140: 68*

[Waterloo Wildl. Expt. Sta., New Marshfield, Ohio.] Abstract: Three juvenile gray squirrels *(Sciurus carolinensis)* were observed to feed on bark-dwelling insects. Insect ingestion was also significantly higher in a sample of subadult-juvenile squirrel stomachs than in a sample of adult squirrel stomachs. These data suggest that insect ingestion by juvenile squirrels may be important in late spring and early summer when forest seed crops are scarce.

Patton, David R., and Win Green. ABERT'S SQUIRRELS PREFER MATURE PONDEROSA PINE. *USDA Forest Serv. Res. Note* RM-169. 3 p., 2 figs. 1970. *WR 140: 68*

[Ariz. State Univ., Tempe.] Abstract: Measurements from 538 ponderosa pines with squirrel clippings underneath showed squirrels preferred trees 11 to 30 inches diameter, breast height. The smallest tree with clippings was 4 inches; the largest, 36. Average diameter of all trees used was 19 inches.

XUM

Redington, Bryce Craig. STUDIES ON THE LIFE HISTORY AND EPIZOOTIOLOGY OF THE PROTOZOAN *HEPATOZOON GRISEISCIURI* OF THE EASTERN GRAY SQUIRREL INCLUDING A RE-DESCRIPTION OF ITS MITE VECTOR *HAEMOGAMASUS REIDI*. *Ph.D. thesis, Univ. Md.* 158 p. 1969. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 69*

Skryja, David D., and Tim W. Clark. REPRODUCTION, SEASONAL CHANGES IN BODY WEIGHT, FAT DEPOSITION, SPLEEN AND ADRENAL GLAND WEIGHT OF THE GOLDEN-MANTLED GROUND SQUIRREL, *SPERMOPHILUS LATERALIS LATERALIS*, (SCIURIDAE) IN THE LARAMIE MOUNTAINS, WYOMING. *Southwestern Nat.* 15(2): 201-208, 1 fig. 15 Oct. 1970. *WR 140: 69*
[Ariz. State Univ., Tempe.]

Smith, Christopher C. THE COEVOLUTION OF PINE SQUIRRELS *(TAMIASCIURUS)* AND CONIFERS. *Ecol. Monographs* 40(3): 349-371, 8 figs. Summer 1970. *WR 140: 69*
[Kans. State Univ., Manhattan.]

Smith, Hanley K. A METHOD OF ANALYZING FOX SQUIRREL STOMACH CONTENTS. *Texas Parks & Wildl. Dept. Tech. Ser.* no. 3. x + 75 p., 114 figs. 1970. *WR 140: 69*

Soon, Bee-Ling, and Robert S. Dorney. OBSERVATIONS ON A COCCIDIUM *(EIMERIA DORNEYI)* FROM THE NORTHERN FLYING SQUIRREL IN ONTARIO. *Bull. Wildl. Disease Assoc.* 5(1): 37-38, 2 figs. Jan. 1969. *WR 140: 69*
[Univ. Waterloo, Waterloo, Ontario, Canada.]

Steiner, A. L. ÉTUDE DESCRIPTIVE DE QUELQUES ACTIVITÉS ET COMPORTEMENTS DE BASE DE *SPERMOPHILUS COLUMBIANUS COLUMBIANUS*. [DESCRIPTIVE STUDY OF SOME ACTIVITIES AND BASIC BEHAVIOR OF *SPERMOPHILUS COLUMBIANUS COLUMBIANUS*.] *Rev. Comp. Animal* (Paris) 4: 3-21. 1970. [From J. Mammal. 51(4, suppl.), 1970. In French with English summ.] *WR 140: 69*

Walker, Robert Edgar. LOCAL DISTRIBUTION IN A POPULATION OF UINTA GROUND SQUIRRELS. *Ph.D. thesis, Utah State Univ.* 71 p. 1969. [From Dissertation Abstr. Intern. 30(8B), 1970.] *WR 140: 69*
Ground squirrels were studied to show the demographic significance of annual variations in their nesting distribution. The number and sequence of emergence of females in the early spring influences the social organization and production of offspring by altering both the breeding density and number of non-productive females in the population.

Weigl, Peter Douglas. THE DISTRIBUTION OF THE FLYING SQUIRRELS, *GLAUCOMYS VOLANS* AND *G. SABRINUS*: AN EVALUATION OF THE COMPETITIVE EXCLUSION IDEA. *Ph.D. thesis, Duke Univ.* 263 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 69*

Wobeser, G. TETANUS IN A GREY SQUIRREL. *Bull. Wildl. Disease Assoc.* 5(1): 18-19. Jan. 1969. *WR 140: 69*
[Univ. Guelph, Guelph, Ontario, Canada.]

Wunder, Bruce A. TEMPERATURE REGULATION AND THE EFFECTS OF WATER RESTRICTION ON MERRIAM'S CHIPMUNK, *EUTAMIAS MERRIAMI*. *Comp. Biochem. Physiol.* 33(2): 385-403. 15 Mar. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 69*

Yamatani, Kiyoshi. [ON THE BREEDING HABITS OF *SCIURUS VULGARIS ORIENTIS* IN CAPTIVITY.] *J. Mamm. Soc. Japan* 4(4-6): 121-124. Dec. 1969. [From J. Mammal. 51(4, suppl.), 1970. In Japanese.] *WR 140: 69*

Zirul, D. L., and W. A. Fuller. WINTER FLUCTUATIONS IN SIZE OF HOME RANGE OF THE RED SQUIRREL *(TAMIASCIURUS HUDSONICUS)*. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 115-127, 6 figs. 1970. *WR 140: 69*
[Univ. Alberta, Edmonton, Alberta, Canada.]

BEAVER

Romaschov, Vitalii A. HELMINTH FAUNA OF EUROPEAN BEAVER IN ITS ABORIGINAL COLONIES OF EURASIA. *Acta Parasitol. Polonica* 17(7): 55-64. 1969. In English with Russian summ. *WR 140: 70*
[Voronezh State Reserv., Voronezh, USSR.]

Wilsson, Lars. MY BEAVER COLONY. *Doubleday & Co., Inc.* (New York). xii + 154 p., 71 figs. 1968. Price $4.95. *WR 140: 70*
My Beaver Colony is a translation of the book *Bäver* published in Stockholm in 1964 and is a major contribution to the literature on beaver *(Castor fiber)* behavior. The work is based on observations of wild colonies, semi-tame colonies within large enclosed segments of streams, and of hand-raised beavers in experimental environments and in Wilsson's home. Behavior and social interactions of beaver among colony members and between strange individuals are recorded; other interesting traits, such as their ability to carry young or building materials while walking upright, and their vocal communications, are also recorded.— Courtesy/ Joseph S. Larson.

Zharkov, I. V. [THE BEAVER IN THE USSR.] *VII Intern. Congr. Game Biol.* p. 365-368. 1967. In Russian with French summ. *WR 140: 70*
[Voronezhskii Zapovednik, Voronezh, USSR.]

Zharkov, I. V. [ON THE CLASSIFICATION OF BEAVER AREAS IN THE USSR.] *VIII Intern. Congr. Game Biol.* p. 337-341. 1970. In Russian with English summ. *WR 140: 70*
[Voronezhskii Zapovednik, Voronezh, USSR.]

MUSKRAT & NUTRIA

Cosgrove, G. E., W. B. Lushbaugh, G. Humason, and M. G. Anderson. *SYNHIMANTUS* (NEMATODA) ASSOCIATED WITH GASTRIC SQUAMOUS TUMORS IN MUSKRATS. *Bull. Wildl. Disease Assoc.* 4(2): 54-57, 5 figs. Apr. 1968. *WR 140: 70*
[Oak Ridge Natl. Lab., Oak Ridge, Tenn.]

Evans, James. ABOUT NUTRIA AND THEIR CONTROL. *Bur. Sport Fisheries & Wildl. Resource Publ.* no. 86. vi + 65 p., illus. Aug. 1970. For sale by Supt. Documents at 65¢. *WR 140: 70*
Major topics: The history of nutria; What are nutria; Nutria fur trapping; Finding out about nutria; What nutria are like; Reproduction; Enemies of nutria; The damage problem; When, where, and how to control nutria; Chemical control; Using zinc phosphide; Other methods of direct control; Indirect control of nutria damage; and The controversial nutria.

Korsakov, G. K. [THE DEPENDENCE OF MUSKRAT DENSITY UPON THE CHARACTERISTICS OF THE WATER COURSES OF THE STEPPE AND STEPPE-FOREST REGIONS.] *VII Intern. Congr. Game Biol.* p. 145-147. 1967. In Russian with French summ. *WR 140: 70*
[Inst. Zhivotnogo Syr'ya & Pushniny, Kirov, USSR.] *"Ondatra zibethica."*

Mahieu, N. POSSIBILITÉS ACTUELLES DE LUTTE CONTRE LE RAT MUSQUÉ AU MOYEN D'APPÂTS EMPOISONNÉS. [PRESENT POSSIBILITIES FOR MUSKRAT CONTROL BY MEANS OF POISONED BAIT.] *Phytoma* 211: 44-45, illus. 1969. [From Biol. Abstr. 51(24), 1970. In French.] *WR 140: 70*
[Prot. Veg., Nantes, France.]

Newson, R. M. POPULATION DYNAMICS OF THE COYPU IN EASTERN ENGLAND. *Small Mammal Newsl.* (Warsaw) 2(7): 145-146. June 1968. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 70*

Wussow, Joachim. DAS HAARKLEID DER BISAMRATTE. [THE PELAGE OF THE MUSKRAT.] *Das Pelzgewerbe* (Berlin) 19(5): 3-36. 1968-1969. [From J. Mammal. 51(4, suppl.), 1970. In German.] *WR 140: 70*

BEARS

Bannikov, A. G., chief editor. [THE POLAR BEAR AND ITS CONSERVATION IN THE SOVIET ARCTIC.] *Hydrometeorological Publishing House* (Leningrad). 188 p., illus. 1969. Price 1 ruble. In Russian with English summaries. *WR 140: 71*

"This paper consists of articles which present new original material dealing with different aspects of biology of one of the most interesting and valuable species of Arctic fauna--the polar bear, in particular: its origin, phylogenetic links and evolution, geographical variability and population structure, former and present-day habitation, distribution and numbers, peculiarities of life history and behavior, epizootological links of the polar bear and its role as a carrier of trichinellosis invasion; the volume of kill in the past and at present, the problems of keeping it in captivity, and others. A review of present-day research and a detailed bibliography on the polar bear are also presented."

Barick, Frank B. BEAR STUDY PROGRESS REPORT. *Wildl. N.C.* 34(10): 10-11, illus. Oct. 1970. *WR 140: 71*

[N.C. Wildl. Resources Comm., Raleigh.] Hunting practices and kill reports provide sources of information on age, food habits, and reproductive rates of the black bear in North Carolina. The statewide bear kill survey indicated a known kill of 180 bears during the 1969 season. Range maps are being compiled to indicate locations of huntable populations.

Folk, G. E., Jr., M. D. Brewer, and D. Sanders. CARDIAC PHYSIOLOGY OF POLAR BEARS IN WINTER DENS. *Arctic* 23(2): 130. June 1970. *WR 140: 71*

Herrero, Stephen. MAN AND THE GRIZZLY BEAR (PRESENT, PAST, BUT FUTURE?). *BioScience* 20(21): 1148-1153, 3 figs. 1 Nov. 1970. *WR 140: 71*

[Univ. Calgary, Alberta, Canada.] Three categories of human activity preceded 98% of all injuries to human beings inflicted by grizzly bears in the national parks. Attacks preceded by hiking in backcountry (31%) involved female grizzlies with cubs in 71% of the instances. Persons injured while camping (61%) were mostly in or near developed areas, and most (38 of 47) were in Yellowstone Park. Yellowstone has the greatest grizzly bear population density of any park and is the only park in which major campgrounds are located in choice grizzly habitat. The third category involves provoking the bear before the attack and accounts for 6% of the injuries.

Jonkel, Charles. THE BEHAVIOR OF CAPTURED NORTH AMERICAN BEARS (WITH COMMENTS ON BEAR MANAGEMENT AND RESEARCH). *BioScience* 20(21): 1145-1147, illus. 1 Nov. 1970. *WR 140: 71*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Animals become nuisances through neglectful management practices--feeding of the bears, allowing people to mingle with feeding bears, and total protection from hunting. Current research, public education, and game management would improve the situation.

Jonkel, Charles J., and Frank L. Miller. RECENT RECORDS OF BLACK BEARS *(URSUS AMERICANUS)* ON THE BARREN GROUNDS OF CANADA. *J. Mammal.* 51(4): 826-828, 1 fig. Nov. 1970. *WR 140: 71*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.]

Lønø, Odd. THE POLAR BEAR *(URSUS MARITIMUS* PHIPPS*)* IN THE SVALBARD AREA. *Norsk Polarinst. Skrifter* 149: 1-103 + 3 pls. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 71*

Moment, Gairdner B. MAN-GRIZZLY PROBLEMS--PAST AND PRESENT / IMPLICATIONS FOR ENDANGERED SPECIES. *BioScience* 20(21): 1142-1144, 1 fig. 1 Nov. 1970. *WR 140: 71*

[Goucher Coll., Towson, Md.] Perhaps the most satisfactory solution to the problem in the national parks would be to eliminate the grizzly from heavily visited areas such as Yellowstone and Glacier. If there are sufficient reasons for maintaining the species in the 48 contiguous states, wildlife refuges suitable for the purpose would be more appropriate.

BEARS--Continued

Rogers, Lynn. BLACK BEAR OF MINNESOTA. *Naturalist* (Minn.) 21(4): 42-47, illus. Winter 1970. *WR 140: 72*
[Univ. Minn., Minneapolis.] Description of population studies in Minnesota including methods and results.

Rukovskii, N. N., and A. G. Kupriyanov. [EARLY SPRING FEEDING OF THE BROWN BEAR ON THE ONEGA PENINSULA.] *Zool. Zhur.* 49(2): 311-312. 1970. [From Biol. Abstr. 51(15), 1970. In Russian with English summ.] *WR 140: 72*
[V. I. Lenin Moscow State Pedagog. Inst., Moscow, USSR.]

Stebler, A. M. MAN AND THE GRIZZLY--COEXISTENCE? INTRODUCTION. *BioScience* 20(21): 1141. 1 Nov. 1970. *WR 140: 72*
[US F&WS, Washington, D.C.] The hazard of contact between man and the grizzly has been growing. Increasingly effective management measures for man's safety need to be designed, implemented, and rigidly enforced.

Stokes, Allen W. AN ETHOLOGIST'S VIEWS ON MANAGING GRIZZLY BEARS. *BioScience* 20(21): 1154-1157. 1 Nov. 1970. *WR 140: 72*
[Utah State Univ., Logan.] Social intolerance and reduced breeding capability are both indications of overcrowding, a condition which may be developing among Yellowstone grizzlies. Control of grizzlies in camping areas requires good preventive measures as well as methods to discourage reenactment of campground visiting by grizzlies.

Vereščagin, N. K. [THE BROWN BEAR IN THE USSR.] *VII Intern. Congr. Game Biol.* p. 43-46. 1967. In Russian with French summ. *WR 140: 72*
[Zool. Inst., Leningrad, USSR.]

Wakefield, Gary C. MOVEMENTS, HABITAT AND POPULATION CHARACTERISTICS OF THE AMERICAN BLACK BEAR IN PENNSYLVANIA. *M.S. thesis, Pa. State Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 72*

RACCOON, RINGTAIL, COATI

Johnson, Albert Sydney III. AN ECOLOGICAL SURVEY OF THE RACCOON, *PROCYON LOTOR*, IN ALABAMA. *Ph.D. thesis, Auburn Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384, 1970.) *WR 140: 72*

Johnson, A. Sydney. BIOLOGY OF THE RACCOON *(PROCYON LOTOR VARIUS* NELSON AND GOLDMAN) IN ALABAMA. *Agr. Expt. Sta. Auburn Univ. Bull.* 402. vi + 148 p., 58 figs. June 1970. *WR 140: 72*
[Univ. Ga., Athens.] The six-year study included observations on aging techniques, physical characteristics, breeding and reproduction, juvenile development, food habits, parasitism and disease, movements, population dynamics, and management practices.

Kappus, Karl D., William J. Bigler, Robert G. McLean, and Heriberto A. Trevino. THE RACCOON / AN EMERGING RABIES HOST. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 507-509. Oct. 1970. *WR 140: 72*
[Natl. Communicable Disease Center, Atlanta, Ga.]

Schneider, Dean George. MOVEMENTS OF FEMALE RACCOONS AND THEIR YOUNG AS DETERMINED BY RADIO-TRACKING. *Ph.D. thesis, Univ. Minn.* 128 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 72*

RACCOON, RINGTAIL, COATI—Continued

Smythe, N. THE ADAPTIVE VALUE OF THE SOCIAL ORGANIZATION OF THE COATI *(NASUA NARICA)*. *J. Mammal.* 51(4): 818-820, 2 figs. Nov. 1970. *WR 140: 73*
[506 Second St., Nelson, British Columbia, Canada.]

MUSTELIDS

Aliev, Farman, and Glen C. Sanderson. THE AMERICAN MINK, *MUSTELA VISON* (SCHREBER, 1777), IN THE USSR. *Säugetierk. Mitteil.* 18(2): 122-127. May 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 73*

Bakeev, N. N., and Yu. N. Bakeev. [ON THE OVERLAPPING OF THE RANGES OF DIFFERENT SPECIES OF *MARTES* PINEL IN THE USSR.] *Bull. Moscow Soc. Nat. Biol. Ser.* 75(2): 27-37. 1970. [From J. Mammal. 51(4, suppl.), 1970. In Russian with English summ.] *WR 140: 73*

Burkel, M. D., M. F. Andrews, and E. C. Meslow. RABIES DETECTION IN ROAD-KILLED SKUNKS *(MEPHITIS MEPHITIS)*. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 496-499, 1 fig. Oct. 1970. *WR 140: 73*
[N. Dak. State Univ., Fargo.]

Darney, Robert S., and Lloyd H. Lauerman, Jr. A HELMINTHOLOGICAL SURVEY OF WILD MINK IN WISCONSIN. *Bull. Wildl. Disease Assoc.* 5(1): 35-36, 2 figs. Jan. 1969. *WR 140: 73*
[Univ. Waterloo, Waterloo, Ontario, Canada.]

Dyer, William G. *SKRJABINGYLUS CHITWOODORUM* (NEMATODA: PSEUDALIIDAE) FROM *MEPHITIS MEPHITIS* IN NORTH CENTRAL NORTH DAKOTA. *Bull. Wildl. Disease Assoc.* 5 (3): 140. July 1969. *WR 140: 73*
[Minot State Coll., Minot, N. Dak.] The nematodes occurred in the frontal sinuses of two male skunks and were found in the fissures of the brain of a road-killed female.

Erlinge, Sam. FOOD HABITS, HOME RANGE AND TERRITORIALITY OF THE OTTER *LUTRA LUTRA* L. *Ph.D. thesis, Univ. Lund* (Sweden). 1970. Available from the author at Månstenvägen 25 F, S-573 00 Tranås, Sweden. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 73*

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DOGS, WOLVES, FOXES

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The topics of food habits of the red fox, population characteristics of the three principal prey (snowshoe hare, red squirrel, and deermouse) of the fox, and habitat preferences of the prey species are investigated.

Johnson, Wendel J. FOOD HABITS OF THE RED FOX IN ISLE ROYALE NATIONAL PARK, LAKE SUPERIOR. *Am. Midland Nat.* 84(2): 568-572. Oct. 1970. *WR 140: 75*
[Univ. Wis.-Green Bay, Marinette.] Abstract: The food habits of the red fox *(Vulpes vulpes)* in Isle Royale National Park were investigated both for seasonal and annual trends, over a 3-year period, 1966-68, by analysis of 448 scats. Mammals were the most important group of prey species. Snowshoe hare *(Lepus americanus)* had the highest per cent of total occurrence and was especially important during the winter months. Foxes forage almost entirely on fruits in August and September. The lack of prey diversity and its effect are discussed.

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[Ontario Dept. Lands & Forests, Maple, Ontario, Canada.] A sample of 244 rabid red fox heads was collected during a one year period to study the sex-age structure of the rabid population. During the increase in rabies in late summer and early fall, juvenile males were the predominant sex-age class in the rabid sample. This increase in rabies corresponds to the time of dispersal and reproductive maturation in juvenile males. The peak of red fox rabies is in March.

Yearling females were the most common sex-age class during this time, which also corresponds to the time of parturition. The oldest rabid red foxes were 4 years old. The results of the study indicate apparent relationships between the susceptibility of red foxes to rabies and various physiological changes which occur at different times of the year.--From abstr.

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[Bur. Sport Fisheries & Wildl., Twin Cities, Minn.] The symposium was held in conjunction with the 34th North American Wildlife and Natural Resources Conference at Chicago in 1970. The following papers were presented: *The wolf as an endangered animal in the conterminous United States*, S. E. Jorgensen; *History of the wolf in Wisconsin*, John M. Keener; *History and status of the wolf in Michigan*, Donald W. Douglass; *Wolf management in Minnesota*, Jarle Leirfallom; *Wolf management in Manitoba*, Robert Webb; *Wolf management in Ontario*, C. H. D. Clarke; *Wolf management in Alaska*, James Harper; *History and status of the wolf in Scandinavia*, Bertil Haglund; *Some considerations on the taxonomy of wolves in Ontario*, R. Standfield; *Implications of wolf ecology to management*, L. David Mech; and *Some philosophical considerations about wolf management*, Durward L. Allen.

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Naddy, Raymond E. THE EASTERN TIMBER WOLF. *Naturalist* (Minn.) 21(4): 34-37, illus. Winter 1970. *WR 140: 76*
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[Inst. Biol. Res., Belgrade, Yugoslavia.]

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[Univ. Wis., Madison.] Oral papillomatosis was observed in an adult male coyote.

Trainer, Daniel O., and James B. Hale. SARCOPTIC MANGE IN RED FOXES AND COYOTES OF WISCONSIN. *Bull. Wildl. Disease Assoc.* 5(4): 387-391, 2 figs. Oct. 1969. *WR 140: 76*
[Univ. Wis., Madison.] Abstract: During the fall and winter of 1967-68 an outbreak of sarcoptic mange *(Sarcoptes scabei)* occurred in Wisconsin among red foxes *(Vulpes fulva)* and coyotes *(Canis latrans)*. Infected animals were usually partially hairless, listless, and emaciated. Skin lesions were characteristically thickened, dry, and crusted; the disease sometimes caused death. Mange occurred in the major fox and coyote ranges of the state and apparently affected fox population numbers.

XUM

DOGS, WOLVES, FOXES--Continued

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General feeding habits as well as seasonal and specific feeding patterns of the gray fox were studied and related to habitat conditions.

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The U.S. Biological Survey and its government hunters undertook to devise and direct a system of predator control after mass killing of wolves threatened the species with extinction. The hunters concentrated on wolves which posed a direct threat to livestock and were known cattle predators. Some of these "renegade" wolves acquired almost legendary histories of avoiding capture while continuing their depredations. The stories of nine of these animals and their eventual capture by government agents are recounted.

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BIG GAME, GENERAL

Allen, Eugene O. MIGRATION HABITS OF THE GALLATIN ELK HERD. *Mont. Outdoors* 5(9): 4-6, [3 figs.]. Sept. 1970. *WR 140: 77*

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[Utah State Univ., Logan.] Abstract: A study of herbage production, forage use, water consumption, and productivity of pronghorn antelope *(Antilocapra americana)* was conducted from 1961 through 1969, on semi-desert range in western Utah. Most of the data were obtained from a small herd of antelope confined by a fence to 10,000 acres. Herbage production on the study area ranged from 114-321 lbs of air-dried herbage per acre over a 5-year period. During the same

period, annual precipitation ranged from 4.24-11.13 inches. During summers of above-average rainfall, forbs provided over 90% of the diet at the peak of their production. Conversely, in years of below-average summer rainfall, forbs were often scarce and contributed less than 20%, browse making up the remainder. Grass was commonly utilized by antelope in early spring, and occasionally in late summer and fall if new growth appeared. Succulence appeared to be the major characteristic of the forage sought by the antelope. During late fall and winter when nearly all forbs were dry, their diet was over 90% browse, mostly black sagebrush *(Artemisia nova)*. Antelope water consumption varied inversely with the quantity and succulence of preferred forage species. When forbs were abundant and their moisture content was 75% or more, the antelope did not drink water even though it was readily available. As vegetation lost succulence, water consumption began, reaching 3 quarts of water per animal per day during extremely dry periods. Fawn:doe ratios on the study area ranged from 100:100 to 181:100. These ratios are for mature does. A statistical analysis of fawn production to precipitation received during the previous summer months indicated a significant relationship and gave statistical values of t=4.42 (P<0.01); r=0.722 (P<0.05).

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[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: The lower mandibles of 47 Newfoundland caribou *(Rangifer tarandus)* were examined to determine the approximate age when molar and permanent premolar teeth erupted. The approximate ages of eruption were: M_1--3 months, M_2--13 months, M_3--25 months, and $P_{2,3,4}$--24 months. All the teeth were fully erupted by 27.5 months of age.

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[Univ. Calif., Davis.]

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[Inst. Forstwissenschaften, Eberswalde, Germany.]

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[Univ. Sydney, Sydney, Australia.]

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Dobroruka, Ludek J. VERLAUF DES HAARWECHSELS BEI EINIGEN HIRSCHEN (ARTIODACTYLA: CERVIDAE). [THE COURSE OF MOLTING IN SOME DEER (ARTIODACTYLA: CERVIDAE).] *Vestnik Cesk. Spolecnosti Zool.* 33(4): 300-312, illus. 1969. [From Biol. Abstr. 51(23), 1970. In German with English summ.] *WR 140: 80*
"Dama dama, Elaphurus davidianus, Cervus elaphus, and *C. nippon."*

Dobroruka, L. J. FECUNDITY OF THE CHINESE WATER DEER, *HYDROPOTES INERMIS* SWINHOE, 1870. *Mammalia* 34(1): 161-162. Mar. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 80*

Dorn, Robert D. MOOSE AND CATTLE FOOD HABITS IN SOUTHWEST MONTANA. *J. Wildl. Mgmt.* 34(3): 559-564. July 1970. *WR 140: 80*
[Mont. State Univ., Bozeman.] Abstract: The Shiras moose *(Alces alces shirasi)* was studied on Red Rock Lakes National Wildlife Refuge in southwest Montana from June, 1968, to March, 1969, to determine use of vegetation types, food habits, and the extent of moose-cattle competition. Observations of moose in the willow *(Salix* spp.*)* type accounted for 84% of the total in summer and 93% in winter. Browse accounted for 98.3 and 99.8% of all forage used by moose in summer and winter, respectively. *Salix myrtillifolia* comprised 58.1% of the total forage in summer and *S. myrtillifolia* and *S. planifolia* accounted for 25.0 and 24.2% of the total forage, respectively, in winter. All 15 species of willow present in this study were potentially important as forage for moose at some time during the year, especially in winter. *S. wolfii* and *S. myrtillifolia* accounted for 50.2 and 15.9%, respectively, of all browse used by cattle in the willow and sedge *(Carex* spp.*)* types in summer. Forage competition between moose and cattle was not significant under conditions prevailing during this study.

Doutt, J. Kenneth. WEIGHTS AND MEASUREMENTS OF MOOSE, *ALCES ALCES SHIRASI.* *J. Mammal.* 51(4): 808. Nov. 1970. *WR 140: 80*
[Carnegie Mus., Pittsburgh, Pa.]

Dzieciołowski, Ryszard. RELATIONS BETWEEN THE AGE AND SIZE OF RED DEER IN POLAND. *Acta Theriologica* 15(17): 253-268, 8 figs. 30 Aug. 1970. In English with Polish summ. *WR 140: 80*
[Forestry Res. Inst., Warsaw, Poland.] Abstract: Statistically significant relationships were found between the age of red deer and the undressed body weight, weight of internal organs (heart, lungs, liver, and kidneys), weight of kidney and intestinal fat, dressed body weight, volume of stomach content, and

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the weight of stomach and intestines (content included). The relation between age and the six variables was best expressed by the 2nd degree regression equation $Y = a_1t^2 + b_1t + c_1$. Correlation coefficients between all the measured variables were statistically significant. The highest correlation was between undressed and dressed body weights in females ($R = 0.9795$) and for undressed body weight and the weight of internal organs in males ($R = 0.8766$).

Dzieciołowski, Ryszard. FOOD SELECTIVITY IN THE RED DEER TOWARDS TWIGS OF TREES, SHRUBS, AND DWARF-SHRUBS. *Acta Theriologica* 15(23): 361-365. 30 Aug. 1970. In English. *WR 140: 81*
[Forestry Res. Inst., Warsaw, Poland.]

Emerson, H. Ray. A COMPARISON OF PARASITIC INFESTATIONS OF WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS)* FROM CENTRAL AND EAST TEXAS. *Bull. Wildl. Disease Assoc.* 5(3): 137-139. July 1969. *WR 140: 81*
[Texas A&M Univ., College Station.] Abstract: The deer from Tyler County, Texas, had heavy infestations of ticks *(Amblyoma americanum)* and were infected by the hemoprotozoan *(Babesia cervi)*. These two factors may be responsible for the unthrifty condition and low reproductive ability of the deer from Tyler County.

Espmark, Yngve. ABNORMAL MIGRATORY BEHAVIOUR IN SWEDISH REINDEER. *Arctic* 23(3): 199-200. Sept. 1970. *WR 140: 81*
[Univ. Stockholm, Stockholm, Sweden.] Summary: Swedish reindeer have sometimes in recent autumns been transported distances of 150 to 300 km. by truck from summer ranges to winter ranges. Many of those animals did not go back to the mountains in spring but remained on the winter ranges. Four factors are considered to be possible causes for the abnormal behaviour: 1) Destruction of the herds' social organization because of the trucking; 2) The importance of uninterrupted learning of the migratory route; 3) Disorientation caused by unfamiliar winter areas; 4) The large proportion of inexperienced animals in the herds.

Evans, E. M. Nesbit. THE REACTION OF A GROUP OF ROTHSCHILD'S GIRAFFE TO A NEW ENVIRONMENT. *East African Wildl. J.* 8: 53-62, 2 figs. + 1 pl. Aug. 1970. *WR 140: 81*
[Cambridge Univ., Cambridge, England.]

Field, C. R. OBSERVATIONS ON THE FOOD HABITS OF TAME WARTHOG AND ANTELOPE IN UGANDA. *East African Wildl. J.* 8: 1-17, 2 figs. + 3 pls. Aug. 1970. *WR 140: 81*
[P.O. Box 30148, Nairobi, Kenya.]

Field, C. R. A STUDY OF THE FEEDING HABITS OF THE HIPPOPOTAMUS *(HIPPOPOTAMUS AMPHIBIUS* LINN.*)* IN THE QUEEN ELIZABETH NATIONAL PARK, UGANDA, WITH SOME MANAGEMENT IMPLICATIONS. *Zool. Africana* (Cape Town) 5(1): 71-86. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 81*

Field, C. R., and R. M. Laws. THE DISTRIBUTION OF THE LARGER HERBIVORES IN THE QUEEN ELIZABETH NATIONAL PARK, UGANDA. *J. Appl. Ecol.* 7(2): 273-294, 4 figs. Aug. 1970. *WR 140: 81*
[P.O. Box 30148, Nairobi, Kenya.]

Fletch, A. L., and R. C. Anderson. FOUR CASES OF SYSTEMIC MYCOSIS IN CERVIDS. *Bull. Wildl. Disease Assoc.* 5(1): 12-15, 4 figs. Jan. 1969. *WR 140: 81*
[Univ. Guelph, Guelph, Ontario, Canada.]

Flook, Donald R. CAUSES AND IMPLICATIONS OF AN OBSERVED SEX DIFFERENTIAL IN THE SURVIVAL OF WAPITI. *Canadian Wildl. Serv. Rept. Ser.* no. 11. 71 p., 23 figs. 1970. Price $1.25. In English with French summ. *WR 140: 82*

"The study reported here was made to help understand the problem of expansion of wapiti populations at the expense of other members of the plant-animal community. It was found that bulls tend to disperse more from the areas where they were reared and die younger than cows. There are thus fewer bulls than cows, particularly on the rearing areas. A number of factors contribute to shortening the life span of bulls, probably a major one being the depletion of their fat reserves during the breeding season in the autumn. This leaves bulls less well prepared to survive the winter."

Frame, George W., and John Goddard. BLACK RHINOCEROS VOCALISATIONS. *East African Wildl. J.* 8: 207. Aug. 1970. *WR 140: 82*

[Univ. Alaska, College.] *"Diceros bicornis."*

Geptner, V. G. [SOME HISTORICAL CONTRIBUTIONS AND CURRENT STATUS OF THE ELK IN THE EUROPEAN REGION OF THE USSR.] *VII Intern. Congr. Game Biol.* p. 33-37. 1967. In Russian with French summ. *WR 140: 82*

Glidewell, Elmo Dwain. SUITABLE HABITAT AS A FACTOR LIMITING PRONGHORN NUMBERS ON THE JORNADA EXPERIMENTAL RANGE. *M.S. thesis, N. Mex. State Univ.* 28 p. 1970. *WR 140: 82*

Pronghorns restricted their distribution to the grassland vegetational type habitat present on the study area, in which the majority of known pronghorn food species occurred. Feeding-time was recorded on pronghorn antelope to determine preferred feeding areas. Low pronghorn numbers appear to be correlated with the small amount of suitable habitat available on the study area.--From abstr. Courtesy/ Volney W. Howard, Jr.

Goddard, J. AGE CRITERIA AND VITAL STATISTICS OF A BLACK RHINOCEROS POPULATION. *East African Wildl. J.* 8: 105-121, 2 figs. + 2 pls. Aug. 1970. *WR 140: 82*

[Luangwa Valley Project, P.O. Box 37, Chipata, Zambia.]

Goddard, John. FOOD PREFERENCES OF BLACK RHINOCEROS IN THE TSAVO NATIONAL PARK. *East African Wildl. J.* 8: 145-161, 1 fig. + 2 pls. Aug. 1970. *WR 140: 82*

[Luangwa Valley Project, P.O. Box 37, Chipata, Zambia.]

Goddard, J. A NOTE ON AGE AT SEXUAL MATURITY IN WILD BLACK RHINOCEROS. *East African Wildl. J.* 8: 205. Aug. 1970. *WR 140: 82*

[Luangwa Valley Project, P.O. Box 37, Chipata, Zambia.]

Harrisson, Tom. THE TAMARAW AND ITS SURVIVAL *(ANOA MINDORENSIS,* CONSERVATION*). IUCN Bull.* 2(11): 85-87, illus. 1969. [From Biol. Abstr. 51(16), 1970.] *WR 140: 82*

[Cornell Univ., Ithaca, N.Y.]

Hasek, Josef. POLESI TVORIHRAZ: CAST CHOVATELSKE JELENI OBLASTI, KDE JELENI ZVER NELOUPE. [THE TVORIHRAZ FOREST RESERVATION: PART OF A DEER BREEDING AREA WHERE DEER DO NOT STRIP BARK FROM TREES.] *Acta Univ. Agr. Fac. Silvicult.* 37 (4): 351-367, illus. 1968. [From Biol. Abstr. 51(17), 1970. In Czech with German summ.] *WR 140: 82*

Heddleston, K. L., and J. E. Gallagher. SEPTICEMIC PASTEURELLOSIS (HEMORRHAGIC SEPTICEMIA) IN THE AMERICAN BISON: A SEROLOGIC SURVEY. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 206-207. July 1969. *WR 140: 82*

[Natl. Animal Disease Lab., Ames, Iowa.] Serum samples from four of five herds showed significant levels of antibody.

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Henry, Vernon G. WEIGHTS AND BODY MEASUREMENTS OF EUROPEAN WILD HOGS IN TENNESSEE. *J. Tenn. Acad. Sci.* 45(1): 20-23. 1970. [From Biol. Abstr. 51(16), 1970.] *WR 140: 83*
[Tenn. Game & Fish Comm., Nashville.] *"Sus scrofa."*

Henry, Vernon G., and Richard H. Conley. SOME PARASITES OF EUROPEAN WILD HOGS IN THE SOUTHERN APPALACHIANS. *J. Wildl. Mgmt.* 34(4): 913-917. Oct. 1970. *WR 140: 83*
[Tenn. Game & Fish Comm., Nashville.] Abstract: Two ectoparasites, the American dog tick *(Dermacentor variabilis)* and the hog louse *(Haematopinus suis)* have been found on European wild hogs *(Sus scrofa)* in the southern Appalachians. Of 205 hogs examined, 35.6 and 13.7% harbored ticks and lice, respectively. Ticks were more prevalent in the spring and summer and lice more prevalent in the winter. Tick and louse parasitism varied considerably from year to year. Seven endoparasites have been found in European wild hogs. These nematodes are gullet worms *(Gongylonema* sp.*)*, lungworms *(Choerstrongylus pudendotectus* and *Metastrongylus elongatus)*, kidney worms *(Stephanurus dentatus)*, stomach worms *(Physocephalus sexalatus)*, ascarids *(Ascaris lumbricoides)*, and whipworms *(Trichuris suis)*. *Gongylonema* sp., *C. pudendotectus*, and *S. dentatus* were most prevalent. The presence of *T. suis* in the kidneys of swine is a new discovery, because it is usually found in the caecum and colon. The importance of parasites in wild hog populations is discussed.

Henshaw, John. A THEORY FOR THE OCCURRENCE OF ANTLERS IN FEMALES OF THE GENUS *RANGIFER*. *Deer* 1(6): 222-226(a). 1968. *WR 140: 83*
[Box 593, College, Alaska.] Abstract: The results of field observations on the behaviour of reindeer and caribou as well as theoretical aspects of ungulate ethology are reviewed in order to explain why females of this genus are unique among deer in that they normally produce antlers. A basic premise is that antlers permit females to be highly competitive during winter when tenable space is progressively reduced according to the morphology of the snow cover. Antlers enhance the social ranking of females and enhance their abilities during competition for restricted food supplies, thereby contributing to their survival and that of the foetus. Calves, which also produce antlers, exhibit a marked degree of precocity and independence of maternal care during winter. It appears, therefore, that the functions of antlers in parent females are not associated with protection of the offspring or of the latter's quest for food during the snowy seasons.

Henshaw, John. ANTLERS--THE BONES OF CONTENTION. *Nature* 224(5223): 1036-1037. 6 Dec. 1969. *WR 140: 83*
[Box 593, College, Alaska.] Notes on functions of antlers and the antler cycle. *"Rangifer."*

Henshaw, John. CONSEQUENCES OF TRAVEL IN THE RUTTING OF REINDEER AND CARIBOU *(RANGIFER TARANDUS)*. *Animal Behaviour* 18(2): 256-258. May 1970. *WR 140: 83*
[Box 593, College, Alaska.] Summary: Observations of rutting reindeer indicate that during herding, breeding is greatly intensified and that the general pattern of courtship behaviour exhibited in stationary groups does not occur. This may be explained by concepts which illustrate movement, high density of animals, high excitement and antler contact as possible erotic stimuli. The maintenance of movement, as well as high density, appears to be important to caribou during the rutting season.

Henshaw, John. NOTES ON THE DISTRIBUTION OF CARIBOU. *Deer* 2(2): 525. June 1970. *WR 140: 83*
[Box 593, College, Alaska.] Notes on present, past, and seasonal distribution of *Rangifer tarandus*.

Herrig, Daniel M., and Arnold O. Haugen. BULL BISON BEHAVIOR TRAITS. *Proc. Iowa Acad. Sci.* 76: 245-262, 5 figs. 1969. *WR 140: 84*
[Iowa State Univ., Ames.] Abstract: Behavior of bull bison *(Bison bison bison)* was studied during June, July, and August 1968 at Fort Niobrara National Wildlife Refuge, Valentine, Nebraska. Ingestive, eliminative, grooming, sexual, agonistic and investigative behavior patterns were observed. Movement patterns and interspecific relationships were also observed.

Hibler, C. P., J. L. Adcock, R. W. Davis, and Y. Z. Abdelbaki. ELAEOPHOROSIS IN DEER AND ELK IN THE GILA FOREST, NEW MEXICO. *Bull. Wildl. Disease Assoc.* 5 (1): 27-30. Jan. 1969. *WR 140: 84*
[Colo. State Univ., Fort Collins.]

Hibler, C. P., J. L. Adcock, G. H. Gates, and R. White. EXPERIMENTAL INFECTION OF DOMESTIC SHEEP AND MULE DEER WITH *ELAEOPHORA SCHNEIDERI* WEHR AND DIKMANS, 1935. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(2): 110-111. Apr. 1970. *WR 140: 84*
[Colo. State Univ., Fort Collins.]

Hickey, William O., and Thomas A. Leege. ECOLOGY AND MANAGEMENT OF REDSTEM CEANOTHUS / A REVIEW. *Idaho Fish & Game Dept. Wildl. Bull.* no. 4. 18 p. 1970. *WR 140: 84*
Information from publications and reports relating to the ecology and management of redstem is summarized. Research objectives are proposed which should help further scientific management of this important big-game browse plant.--From abstr.

Hoff, G. L., J. Spalatin, D. O. Trainer, and R. P. Hanson. ISOLATION OF A BUNYAMWERA GROUP ARBOVIRUS FROM A NATURALLY INFECTED CARIBOU. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 483-487. Oct. 1970. *WR 140: 84*
[Univ. Wis., Madison.]

Hudson, R., W. D. Kitts, and P. J. Bandy. MONITORING PARASITE ACTIVITY AND DISEASE IN THE ROCKY MOUNTAIN BIGHORN BY ELECTROPHORESIS OF SEROMUCOIDS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(2): 105-106, 3 figs. Apr. 1970. *WR 140: 84*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Irvine, Charles Anthony. THE DESERT BIGHORN SHEEP OF SOUTHEASTERN UTAH. *M.S. thesis, Utah State Univ.* 1969. Listed in: (Usborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 84*

Jacobson, Richard H., David E. Worley, and Kenneth R. Greer. THE FRINGED TAPEWORM *(THYSANOSOMA ACTINIOIDES)* AS A PARASITE OF THE ROCKY MOUNTAIN ELK IN YELLOWSTONE NATIONAL PARK. *Bull. Wildl. Disease Assoc.* 5(2): 95-98, 1 fig. Apr. 1969. *WR 140: 84*
[Mont. State Univ., Bozeman.] Post-mortem examination of 181 elk *(Cervus canadensis nelsoni)* from the northern Yellowstone Park herd in 1967-68 revealed that 41% were infected with *Thysanosoma actinioides.* Infections occurred in all age classes of animals. Prevalence of the parasite was higher in calves and yearlings than in mature elk. Infections varied from 1 to 16 worms per animal, with an average intensity of 4.3 in 75 elk. Worms were confined to the first 6.2 feet of the small intestine, with no distinct habitat preference apparent within this area. Little evidence of *T. actinioides* or gross lesions associated with its presence was found in the liver or bile ducts of elk examined 20 to 40 minutes after death.--From abstr.

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Jaczewski, Zbigniew, and Bonifacy Gaĺka. EFFECTS OF ADMINISTRATION OF TESTOSTERONUM PROPIONICUM ON THE ANTLER CYCLE IN RED DEER. *VIII Intern. Congr. Game Biol.* p. 303-308, 10 figs. 1970. In English with Russian summ. *WR 140: 85*
[Polish Acad. Sci., Popielno, Poland.] *"Cervus elaphus."*

Jansen, J., Jr. THE GASTRO-INTESTINAL NEMATODES OF THE WILD BOAR *(SUS SCROFA L.)* IN THE NETHERLANDS. *VII Intern. Congr. Game Biol.* p. 455-458. 1967. In English with French summ. *WR 140: 85*
[State Univ., Utrecht, Netherlands.]

Jarman, Mrs. M. V. ATTACHMENT TO HOME AREA IN IMPALA. *East African Wildl. J.* 8: 198-200. Aug. 1970. *WR 140: 85*
[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.] *"Aepyceros melampus."*

Jeffrey, Sonia M. ELEPHANTS ON THE FARM. *Oryx* 10(5): 302-304, [1 fig.]. Sept. 1970. *WR 140: 85*
Report of damage to farms on the edge of a Western Ghana forest reserve.

Kerr, M. A., V. J. Wilson, and H. H. Roth. STUDIES ON THE AGRICULTURAL UTILIZATION OF SEMI-DOMESTICATED ELAND *(TAUROTRAGUS ORYX)* IN RHODESIA. 2. FEEDING HABITS AND FOOD PREFERENCES. *Rhodesian J. Agr. Res.* 8(1): 71-77, 1 fig. 1970. *WR 140: 85*
[P.O. Box 8365, Causeway, Salisbury, Rhodesia.] Food habits were evaluated by direct field observations using the animal-minutes method. Approximately 50 different plant species were eaten. Seasonal changes in forage preference are presented. Feeding habits appear to be determined by availability and preference. Forage preference during the dry season appears to be governed by the availability of green plant material.--From summ.

Klein, David R. INTERACTIONS OF *RANGIFER TARANDUS* (REINDEER AND CARIBOU) WITH ITS HABITAT IN ALASKA. *VIII Intern. Congr. Game Biol.* p. 289-293. 1970. In English with Russian summ. *WR 140: 85*
[Alaska Coop. Wildl. Res. Unit, College.]

Knight, Richard R. THE SUN RIVER ELK HERD. *Wildl. Monographs* no. 23. 66 p., 17 figs. Oct. 1970. *WR 140: 85*
[Univ. Idaho, Moscow.] Early phases of the investigation were concentrated on forage preferences and range relationships. Later phases included the definition of migration routes and population characteristics of different segments of the herd through the use of individually marked animals. Grouping characteristics of the elk were examined in respect to season and vegetational type. Group sizes were greatest during the winter and smallest in early and late summer. Eight winter range areas were examined with respect to population characteristics of the animals using them. Calf:cow ratios varied between years and areas.--From summ.

König, Erwin. DIE BEZIEHUNGEN ZWISCHEN DEM JAHRESPERIODISCHEN GANG DES WASSER- UND ZUCKERGEHALTES EINIGER BAUMRINDEN UND DEM SCHÄLEN DURCH ROTWILD. [THE RELATIONSHIP BETWEEN THE SEASONAL WATER AND SUGAR CONTENT OF SOME TREE BARKS AND PEELING BY RED DEER.] *VIII Intern. Congr. Game Biol.* p. 316-320, 4 figs. 1970. In German with Russian summ. *WR 140: 85*

Kotrly, A. DOMMAGES CAUSÉS PAR L'ÉCORCAGE EN RAPPORT AVEC LES HELMENTHIASES. [DAMAGE CAUSED BY PEELING IN RELATION TO HELMINTHIASIS.] *VII Intern. Congr. Game Biol.* p. 429-432. 1967. In French with English summ. *WR 140: 85*
"Cervus elaphus."

Kotrly, A. LA FAUNE DES HELMINTHES CHEZ LES RUMINANTS SAUVAGES DE LA FAMILLE DES CERVIDÉS ET DES BOVIDÉS EN TCHÉCOSLOVAQUIE. [THE HELMINTHOFAUNA ON WILD LIVING RUMINANTS OF THE FAMILIES CERVIDAE AND BOVIDAE IN CZECHOSLOVAKIA.] *VII Intern. Congr. Game Biol.* p. 443-447. 1967. In French with English summ. *WR 140: 85*

Kozlo, P. G. [FACTORS DETERMINING THE POPULATION DYNAMICS OF *SUS SCROFA* IN THE BELOVEZHSKYI FOREST.] *Zool. Zhur.* 49(3): 422-430, illus. 1970. [From Biol. Abstr. 51(16), 1970. In Russian with English summ.] *WR 140: 86*

Kozlovskii, A. A. [THE PROTECTION OF FOREST VEGETATION FROM DAMAGE CAUSED BY ELK.] *VII Intern. Congr. Game Biol.* p. 423-427. 1967. In Russian with French summ. *WR 140: 86*

Krämer, Augustin. BEOBACHTUNGEN AN MARKIERTEN GEMSEN. [OBSERVATIONS ON MARKED CHAMOIS.] *VII Intern. Congr. Game Biol.* p. 171-174. 1967. In German with English summ. *WR 140: 86*
[Univ. Zürich, Zürich, Switzerland.]

Krämer, Augustin. BESTANDESSCHÄTZUNG BEI GEMSEN MIT HILFE DES LINCOLN INDEX. [POPULATION ESTIMATES OF CHAMOIS BY MEANS OF THE LINCOLN INDEX.] *VIII Intern. Congr. Game Biol.* p. 294-296. 1970. In German with Russian summ. *WR 140: 86*
[Univ. Zürich, Zürich, Switzerland.]

Kubota, Joe, Samuel Rieger, and V. A. Lazar. MINERAL COMPOSITION OF HERBAGE BROWSED BY MOOSE IN ALASKA. *J. Wildl. Mgmt.* 34(3): 565-569, 2 figs. July 1970. *WR 140: 86*
[SCS, Ithaca, N.Y.] Abstract: The mineral composition of browse plants for moose *(Alces alces)* was studied in the Cook Inlet-Susitna region and on Kodiak Island, Alaska. The level of macro- and micronutrients, an indicator of food quality, is highest in summer when leaves of browse plants, herbaceous plants, and grasses are available food sources and lowest in winter when food is limited primarily to twigs. These differences, due to seasonable availability of parts and kinds of plants, were larger than were the differences due to plants growing in different kinds of soils.

Kurt, Fred. BEOBACHTUNGEN ZUR FORTPFLANZUNGSLEISTUNG DES REHS. [OBSERVATIONS ON THE REPRODUCTION OF THE ROE-DEER.] *VII Intern. Congr. Game Biol.* p. 38-42, 1 fig. 1967. In German with English summ. *WR 140: 86*
[Univ. Zürich, Zürich, Switzerland.]

Kutzer, E., and E. Knaus. UNTERSUCHUNGEN UEBER DIE ENDOPARASITENFAUNA EINES REHBESTANDES IN DER FREIEN WILDBAHN. [INVESTIGATIONS INTO THE FAUNA OF PARASITES OF A WILD POPULATION OF ROE DEER.] *Z. Jagdwiss.* 15(2): 62-72. 1969. [From Biol. Abstr. 51(22), 1970. In German with French and English summ.] *WR 140: 86*
[Tieraerztl. Hochsch., Vienna, Austria.]

Laws, R. M. BIOLOGY OF AFRICAN ELEPHANTS *(LOXODONTA AFRICANA). Sci. Prog.* 58(230): 251-262. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 86*
[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.]

Laws, R. M., I. S. C. Parker, and R. C. B. Johnstone. ELEPHANTS AND HABITATS IN NORTH BUNYORO, UGANDA. *East African Wildl. J.* 8: 163-180, 1 fig. Aug. 1970. *WR 140: 86*
[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.]

Lawton, R. M., and Mary Gough. ELEPHANTS OR FIRE--WHICH TO BLAME? *Oryx* 10 (4): 244-248 + 4 pls. May 1970. *WR 140: 86*
Dry season fires appear to do more damage to vegetation than the destructive grazing of elephants in the Luangwa Valley, Zambia.

Leuthold, Walter. PRELIMINARY OBSERVATIONS ON FOOD HABITS OF GERENUK IN TSAVO NATIONAL PARK, KENYA. *East African Wildl. J.* 8: 73-84 + 1 pl. Aug. 1970. *WR 140: 86*
[Tsavo Res. Project, P.O. Box 14, Voi, Kenya.] *"Litocranius walleri."*

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Lincoln, G. A., R. W. Youngson, and R. V. Short. THE SOCIAL AND SEXUAL BEHAVIOUR OF THE RED DEER STAG. *J. Reprod. Fert.* suppl. 11: 71-103. Mar. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 87*

Ling, Harry. HIRVIKANNAN RAKENTEESTA JA TUOTOSTA EESTISSÄ. [ON THE COMPOSITION AND PRODUCTIVITY OF THE MOOSE *(ALCES ALCES)* POPULATION IN THE ESTONIAN SSR.] *Suomen Riista* 22: 14-23, 2 figs. 1970. In Finnish with English summ. *WR 140: 87*

Lochman, Josef, and Alexandr Barth. INFLUENCE DE LA STRUCTURE DES ALIMENTS SUR LA DIGESTION DES CERVIDÉS. [INFLUENCE OF FODDER STRUCTURE ON DIGESTION OF CERVIDAE.] *VII Intern. Congr. Game Biol.* p. 231-234. 1967. In French with English summ. *WR 140: 87*
[Inst. Res. Sylviculture & Cynegetique, Zbraslav/Vltava, Czechoslovakia.]

Lovaas, Allan L. PEOPLE AND THE GALLATIN ELK HERD. *Mont. Fish & Game Dept.* 44 p., 34 figs. Apr. 1970. *WR 140: 87*
The historical development of the Gallatin elk herd and the role that man's presence has played in the herd's distribution, size structure, and management are discussed. Detail is given to complications in management practices which the public creates.

Mambetzhumaev, A. M. [THE POPULATION AND DISTRIBUTION OF *GAZELLA SUBGUTTUROSA* IN THE USTYURT PLATEAU AND KYZYLKUMY DESERT.] *Zool. Zhur.* 49(3): 431-434. 1970. [From Biol. Abstr. 51(16), 1970. In Russian with English summ.] *WR 140: 87*
[Kara-Kalpak Pedagog. Inst., Nukus, USSR.]

Mapston, Raymond D., Rex S. Zobell, Kenneth B. Winter, and William D. Dooley. A PASS FOR ANTELOPE IN SHEEP-TIGHT FENCES. *J. Range Mgmt.* 23(6): 457-459, 3 figs. Nov. 1970. *WR 140: 87*
Highlight: A Wyoming study has resulted in development of an inexpensive, easily installed pass structure that facilitates movement of pronghorn antelope through fences and retains livestock. Patterned after the common cattleguard, the antelope pass consists of a 5.5 x 6-foot lightweight grill installed on timbers over a 15-inch pit with earth ramps on each end. Proper location and installation are essential to obtain use by antelope. Adjustment and learning through experience and association are important factors in the effectiveness of pass structures. Total cost including installation, is less than $100 per unit.

McEwan, E. H., and P. E. Whitehead. SEASONAL CHANGES IN THE ENERGY AND NITROGEN INTAKE IN REINDEER AND CARIBOU. *Canadian J. Zool.* 48(5): 905-913, 3 figs. Sept. 1970. *WR 140: 87*
[Canadian Wildl. Serv., Vancouver, British Columbia, Canada.] Abstract: The relation between energy intake and body weight of reindeer and caribou are summarized. The results indicate that caloric intake was 35-45% lower in winter than during the summer growth period. The relation between heat production and body weight also exhibited a cyclical pattern. Heat production per unit of metabolic weight decreased by 25% (mid-August to mid-November). From calorimetry studies, the relative proportions of protein and fat deposition from weaning to 12 months of age were estimated. The amount of digestible nitrogen required for N equilibrium amounted to 0.462 g $N/W^{0.75}$ per day, a value comparable to those reported for cattle and sheep. The estimated metabolizable energy requirement for maintenance of a 70-kg reindeer in winter amounted to 5.5 Mcal/day, or about 200 $kcal/W^{0.75}$ per day.

Menzel, Karl E., chairman. PROCEEDINGS OF THE FOURTH ANTELOPE STATES WORKSHOP / JANUARY 27-28, 1970 / SCOTTSBLUFF, NEBRASKA. [*Nebr. Game & Parks Comm.*] v + 139 p. 1970. *WR 140: 87*
[Nebr. Game & Parks Comm., Bassett.] The following papers are included: *A brief description of antelope range and distribution in Nebraska*, Harvey Y.

Suetsugu; *Winter wheat utilization by pronghorn antelope in northwestern Nebraska*, J. Leland Hepworth; *Success and failure of antelope transplants in Kansas*, Bill D. Hlavachick; *Antelope herd ranges in central Montana*, Duane Pyrah; *Antelope management and BLM's wildlife habitat management planning system*, Terry A. McGowan; *Tres Piedras antelope herd--habitat development and management*, Montford H. Woody; *Two "killer winters", 1964-1965 and 1968-1969, in North Dakota*, James V. McKenzie; *Effects of prolonged deep snow and cold winters on pronghorn mortality and reproduction in South Dakota*, Douglas R. West; *Southeastern Montana antelope population trends in relation to severe winters*, H. O. Compton; *Factors influencing success of pronghorn hunters*, Ronald M. Fowler; *An experiment in promoting quality antelope hunting*, W. D. "Pete" Carter; *Some possible predator-prey relationships between bobcats and pronghorn antelope on desert ranges*, Donald M. Beale; *Development of a technique for night-trapping antelope fawns*, Sam Brownlee and Tommy L. Hailey; *Intrauterine mortality in the pronghorn*, Bart W. O'Gara; *A six year study of antelope productivity and survival in southern New Mexico*, Parry Larsen; *Eye lens weights versus jaws in age determination of antelope*, Joseph M. Hnatiuk; *Casper antelope pass studies*, Raymond D. Mapston; *A brief historic review of the pronghorn antelope in Alberta*, William Wishart; and *Food habits in relation to physical condition in two populations of pronghorns*, Bart W. O'Gara and Kenneth R. Greer.

Meyer-Brenken, Horst. ZUR VERBREITUNG UND BIOLOGIE DER SCHWARZEN MUTANTE DES REHWILDES *(CAPREOLUS CAPREOLUS L.)*. [ON THE DISTRIBUTION AND BIOLOGY OF THE BLACK PHASE OF THE ROE DEER *(CAPREOLUS CAPREOLUS)*.] *VIII Intern. Congr. Game Biol.* p. 300-302. 1970. In German with Russian summ. *WR 140: 88*
[3051 Haste, Germany.]

Mitchell, H. B. RAPID AERIAL SEXING OF ANTLERLESS MOOSE IN BRITISH COLUMBIA. *J. Wildl. Mgmt.* 34(3): 645-646, 1 fig. July 1970. *WR 140: 88*
[Dept. Recreation & Conserv., Williams Lake, British Columbia, Canada.]
Abstract: Moose *(Alces alces andersoni)* of Central British Columbia can be rapidly sexed during helicopter aerial surveys to obtain population composition after bulls have lost their antlers. Cows, when seen from behind, exhibit a white volval patch on a solid black background; bulls show no patch. Secondary sex characteristics, such as snout color and bell shape, have also proved useful in sexing adult moose.

Moran, Richard J. PRECOCIOUS ANTLER DEVELOPMENT AND SEXUAL MATURITY IN A CAPTIVE ELK. *J. Mammal.* 51(4): 812-813. Nov. 1970. *WR 140: 88*
[Houghton Lake Wildl. Res. Sta., Box 158, Houghton Lake Heights, Mich.]

Moulton, J. E., and R. Sachs. VERMINOUS PNEUMONIA IN EAST AFRICAN ANTELOPES. *J. Comp. Pathol.* 80(1): 169-172, illus. 1970. [From Biol. Abstr. 51(15), 1970.] *WR 140: 88*
[Univ. Calif., Davis.]

Murray, James O., and Daniel O. Trainer. BLUETONGUE VIRUS IN NORTH AMERICAN ELK. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 144-148, 1 fig. July 1970. *WR 140: 88*
[Univ. Wis., Madison.] The possible role of elk in the epizootiology of bluetongue was discussed.--From abstr.

Myshnev, V. G. [THE PROBLEM OF THE CRIMEAN FORESTS AND THE WILD UNGULATES.] *Priroda* (Moscow) 3: 88-91. 1970. [From J. Mammal. 51(4, suppl.), 1970. In Russian.] *WR 140: 88*

Neiland, K. A., J. A. King, B. E. Huntley, and R. O. Skoog. THE DISEASES AND PARASITES OF ALASKAN WILDLIFE POPULATIONS, PART I. SOME OBSERVATIONS ON BRUCELLOSIS IN CARIBOU. *Bull. Wildl. Disease Assoc.* 4(2): 27-36, 1 fig. Apr. 1968. *WR 140: 88*
[Alaska Dept. Fish & Game, Fairbanks.] Data on brucellosis in several Alaskan caribou herds during 1962-65 are summarized. A decline (5% to 3.4%) in the prevalence of placental retention and/or excessive bleeding at parturition was

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also observed on the Arctic calving grounds in northwest Alaska in 1963 and 1965. Various additional conditions have been observed, from each of which brucella organisms were isolated on several occasions. These include orchitis-epididymitis, bursitis-synovitis and metritis, singly or in combination. In some cases, the observed lesions no doubt resulted in one or more of the following signs: sterility, lameness, and/or abortion with (probable) subsequent death of the female following putrefaction of retained placental structures.--From abstr.

Neiland, Kenneth A. WEIGHT OF DRIED MARROW AS INDICATOR OF FAT IN CARIBOU FEMURS. *J. Wildl. Mgmt.* 34(4): 904-907, 4 figs. Oct. 1970. *WR 140: 89*
[Alaska Dept. Fish & Game, Fairbanks.] Abstract: Analyses of 34 femur marrow samples from barren ground caribou, *Rangifer tarandus granti*, revealed that this tissue is a three-component system comprised of water, fat and non-fat residue. Both the water and fat, and residue and fat are linearly and inversely related. Because the residue amounts to only 2-6% of the net weight, the dry weight of the marrow, except at low fat levels, is essentially equal to the weight of fat in the marrow. For maximum accuracy at low fat levels, the dry weight:fat inequality can be corrected by subtracting the average residue value for that fat level from the dry weight. Such corrected dry weights adequately measure femur fat content at all fat levels for many studies concerned with marrow fat reserves.

Norderhaug, Magnar. SVALBARD-REINENS UTBREDELSE I 1969-ÅRENE. [DISTRIBUTION OF THE REINDEER, *RANGIFER TARANDUS PLATYRHYNCUS*, IN SVALBARD IN THE 1960'S.] *Norsk Polarinst. Medd.* 99: 132-139, illus. 1970. [From Biol. Abstr. 51(24), 1970. In Norwegian with English summ.] *WR 140: 89*
[Norsk Polarinst., Oslo, Norway.]

Norderhaug, Magnar. SVALBARD-REINEN I 1960-ÅRENE: BEITEAREAL OG BESTAND. [RANGE AND POPULATION SIZE OF THE SVALBARD REINDEER *(RANGIFER TARANDUS PLATYRHYNCUS* IN THE 1960'S).] *Norsk Polarinst. Medd.* 99: 253-264, illus. 1970. [From Biol. Abstr. 51(24), 1970. In Norwegian with English summ.] *WR 140: 89*
[Norsk Polarinst., Oslo, Norway.]

Östbye, Eivind. RAVN SOM ANGRIPER REIN. [RAVEN ATTACKING REINDEER.] *Fauna* 22(4): 265-266. 1969. [From Biol. Abstr. 51(18), 1970. In Norwegian with English summ.] *WR 140: 89*
[Univ. Blindern, Blindern, Norway.]

Owen, Rosemary E. A. SOME OBSERVATIONS ON THE SITATUNGA IN KENYA. *East African Wildl. J.* 8: 181-195, 5 figs. + 1 pl. Aug. 1970. *WR 140: 89*
[P.O. Box 388, Nakuru, Kenya.] *"Tragelaphus spekei."*

Padaiga, V. I., and B. B. Marma. [EXTENT OF WHICH THE ROE DEER ARE INFESTED WITH PARASITES DEPENDING ON THEIR POPULATION AND LIVING CONDITIONS.] *Zool. Zhur.* 49(2): 283-287, illus. 1970. [From Biol. Abstr. 51(15), 1970. In Russian with English summ.] *WR 140: 89*

Pantić, O. Jablan, and J. Brna. THE DEVELOPMENT OF RED-DEER SKELETON DURING EMBRYOGENESIS. *VII Intern. Congr. Game Biol.* p. 105-112, 5 figs. 1967. In English with Russian summ. *WR 140: 89*
[Bulevar JNA 18, Belgrade, Yugoslavia.]

Pantić, V. THE ROLE OF PITUITARY IN THE DEVELOPMENT OF ANTLERS. *VII Intern. Congr. Game Biol.* p. 87-91, 2 figs. 1967. In English with Russian summ. *WR 140: 89*

Patton, David R. DEER AND ELK USE OF A PONDEROSA PINE FOREST IN ARIZONA BEFORE AND AFTER TIMBER HARVEST. *USDA Forest Serv. Res. Note RM*-139. 7 p., 5 figs. 1969. *WR 140: 90*
[Ariz. State Univ., Tempe.] Abstract: Animal use increased to almost six deer and elk per section per year on the cut watershed. During the same period, use on an adjacent uncut forest changed little. The new environment provided additional food while maintaining sufficient vegetation for cover.

Patton, David R., and Wilson B. Casner. PORT-A-PUNCH RECORDING AND COMPUTER SUMMARIZATION OF PELLET COUNT DATA. *USDA Forest Serv. Res. Note RM*-170. 7 p., 2 figs. 1970. *WR 140: 90*
[Ariz. State Univ., Tempe.] Abstract: Data are punched manually, directly on perforated computer cards, in the field. When a large number of deer and elk pellet plots are to be counted, the system will reduce office work and eliminate many errors from transposed figures. A Fortran computer program is presented which summarizes and prints the most common factors associated with pellet counts. No statistical tests are made in the program, but parameters for such tests are available from the computer printout. An average deck of 500 cards costs approximately $3 to run.

Pavlović, Milutin. INVESTIGATIONS OF ROE-BUCK SKIN. *VII Intern. Congr. Game Biol.* p. 119-123, 5 figs. 1967. In English with Russian summ. *WR 140: 90*
[Bulevar JNA 18, Belgrade, Yugoslavia.]

Pearson, Henry A. STARVATION IN ANTELOPE WITH STOMACHS FULL OF FEED. *USDA Forest Serv. Res. Note RM*-148. 4 p., 1 fig. 1969. *WR 140: 90*
[Northern Ariz. Univ., Flagstaff.] Abstract: Heavy snows in northern Arizona completely covered vegetation available to antelope herds. After native and supplemental feed became available, antelope died from starvation with stomachs full of feed, apparently due to rumen malfunction. No ciliate protozoa were observed in the rumen contents although several types of bacteria similar to those described in domestic and wild ruminants were observed.

Peek, James M. WILDERNESS MOOSE. *Naturalist* (Minn.) 21(4): 38-41, illus. + map. Winter 1970. *WR 140: 90*
[Univ. Minn., Minneapolis.] Management of moose in a wilderness area.

Petrović, Z., A. Borđoški, and S. Popović. CONTRIBUTION A LA CONNAISSANCE DE LA FAUNE DES HELMINTHES CHEZ LES CERFS *(CERVUS ELAPHUS)* ET CHEZ LES CHEVREUILS *(CAPREOLUS CAPREOLUS)*. [CONTRIBUTION TO THE KNOWLEDGE OF THE HELMINTHOLOGICAL FAUNA OF RED DEER *CERVUS ELAPHUS* AND ROE DEER *CAPREOLUS CAPREOLUS*.] *VII Intern. Congr. Game Biol.* p. 449-453, 3 figs. 1967. In French with English summ. *WR 140: 90*
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[Bulevar JNA 18, Belgrade, Yugoslavia.]

Pfeffer, P., and H. Genest. BIOLOGIE COMPARÉE D'UNE POPULATION DE MOUFLONS DE CORSE *(OVIS AMMON MUSIMON)* DU PARC NATUREL DU CAROUX. [COMPARATIVE BIOLOGY OF A POPULATION OF CORSICAN WILD SHEEP *(OVIS AMMON MUSIMON)* IN THE NATURE RESERVE OF CAROUX.] *Mammalia* 33(2): 165-192, illus. 1969. [From Biol. Abstr. 51(17), 1970. In French with English summ.] *WR 140: 90*
[Mus. Natl. Hist. Nat., Paris, France.]

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Pirkola, Matti K., Yrjö Aho, and Yrjö Paasikunnas. HIRVIEN VILJAPELLOILLA AIHEUTTAMIEN VAHINKOJEN TORJUNNASTA HAJUAINEILLA. [FINNISH EXPERIMENTS WITH REPELLENTS FOR PREVENTING MOOSE DAMAGE ON FIELDS.] *Suomen Riista* 22: 54-66, 6 figs. 1970. In Finnish with English summ. *WR 140: 91*

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Ramsey, Charles W. TEXOTICS. *Texas Parks & Wildl. Dept. Bull.* no. 49. 46 p., illus. 1969. *WR 140: 91*
[Texas Parks & Wildl. Dept., Austin.] Life history information of 9 spp. of big game introduced into Texas.

Robbel, Hans, and Graham Child. NOTES ON THE 1969 IMPALA RUT IN THE MOREMI. *Botswana Notes & Records* no. 2. p. 95-97. 1970. *WR 140: 91*
[Dept. Wildl. & Natl. Parks, Maun, Botswana.]

Roettcher, D., and R. R. Hofmann. THE AGEING OF IMPALA FROM A POPULATION IN THE KENYA RIFT VALLEY. *East African Wildl. J.* 8: 37-42 + 8 pls. Aug. 1970. *WR 140: 91*
[Univ. Coll., Nairobi, Kenya.]

Roth, Harald H. STUDIES ON THE AGRICULTURAL UTILIZATION OF SEMI-DOMESTICATED ELAND *(TAUROTRAGUS ORYX)* IN RHODESIA. 1. INTRODUCTION. *Rhodesian J. Agr. Res.* 8(1): 67-70. 1970. *WR 140: 91*
[FAO, Rome, Italy.] In order to take advantage of the high biomass of the African savanna, studies with semi-domesticated eland were undertaken to obtain data on the productivity of eland in comparison with cattle, and to gain practical experience in the management and husbandry of eland.

Sägesser, Hannes. ÜBER DIE BEEINFLUSSUNG DES GEWICHTS BEIM REH *(CAPREOLUS C. CAPREOLUS* LINNÉ 1758*)* DURCH EINIGE ÖKOLOGISCHE FAKTOREN. [THE EFFECT OF SOME ECOLOGICAL FACTORS ON THE WEIGHT OF THE ROE-DEER.] *VII Intern. Congr. Game Biol.* p. 113-118. 1967. In German with English summ. *WR 140: 91*
[Naturhistorisches Mus., Bern, Switzerland.]

Samson, Kay S., and Byron R. Donaldson. PARASITES OF THE JAVELINA IN NEW MEXICO. *Bull. Wildl. Disease Assoc.* 4(4): 131. Oct. 1968. *WR 140: 91*
[P.O. Box 3518, Las Cruces, N. Mex.]

Samuel, William M., and William A. Low. PARASITES OF THE COLLARED PECCARY FROM TEXAS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 16-23. Jan. 1970. *WR 140: 91*
[Univ. Alberta, Edmonton, Canada.]

Scheldt, R. S., and E. W. Tisdale. ECOLOGY AND UTILIZATION OF CURL-LEAF MOUNTAIN MAHOGANY IN IDAHO. *Forest, Wildl. & Range Expt. Sta. Station Note* no. 15. 2 p., 1 fig. Nov. 1970. *WR 140: 91*
"The major problem in most stands is excessive utilization, mainly by mule deer and other big game. Rabbits and possibly some rodents are an important contributing factor for damage in some areas. Use by domestic livestock does not appear to be a significant factor in the areas occupied by mountain mahogany in Idaho."

Schmid, F. J. GEDANKEN ÜBER DIE URSACHE UND BEKÄMPFUNG DER SCHÄLSCHÄDEN DES ROTWILDES. [THOUGHTS UPON THE CAUSES AND CONTROL OF DAMAGE BY RED DEER.] *VII Intern. Congr. Game Biol.* p. 607-610. 1967. In German with Russian summ. *WR 140: 91*

Schweinsburg, Raymond Eugene. SOCIAL BEHAVIOR OF THE COLLARED PECCARY *(PECARI TAJACU)* IN THE TUCSON MOUNTAINS. *Ph.D. thesis, Univ. Ariz.* 129 p. 1969. [From Dissertation Abstr. Intern. 30(2B), 1969.] *WR 140: 92*

Simmons, Norman M. REFUGE IN A WILDERNESS. *Explorers J.* p. 127-133, [6 figs.]. June 1967. *WR 140: 92*
[Canadian Wildl. Serv., Fort Smith, Northwest Territories, Canada.] Management practices for bighorn sheep on the Cabeza Prieta Game Reserve in Arizona are reported. An account of the wool dyeing technique used for identification of individuals and its success is given.

Simonič, Anton. ÖKOLOGIE DES ROTWILDES IN SLOWENIEN. [ECOLOGY OF THE RED-DEER IN SLOVENIA.] *VII Intern. Congr. Game Biol.* p. 149-158, 2 figs. 1967. In German with English summ. *WR 140: 92*

Simonič, Anton. EINIGE ERGEBNISSE ÜBER DIE ANSIEDLUNG DES MUFFELWILDES *(OVIS AMMON MUSIMON)* IN VERSCHIEDENEN BIOTOPEN SLOWENIENS. [SOME RESULTS UPON THE COLONIZATION OF THE MOUFFLON *(OVIS AMMON MUSIMON)* IN VARIOUS SLOVENIAN BIOTOPES.] *VIII Intern. Congr. Game Biol.* p. 282-288, 1 fig. 1970. In German with Russian summ. *WR 140: 92*

Skoog, Ronald Oliver. ECOLOGY OF THE CARIBOU *(RANGIFER TARANDUS GRANTI)* IN ALASKA. *Ph.D. thesis, Univ. Calif.* (Berkeley). 720 p. 1968. [From Dissertation Abstr. Intern. 30(3B), 1969.] *WR 140: 92*

Smith, Norman Sherrill. THE PERSISTENCE AND FUNCTIONAL LIFE OF THE CORPUS LUTEUM IN THE AFRICAN ELEPHANT. *Ph.D. thesis, Wash. State Univ.* 145 p. 1969. [From Dissertation Abstr. Intern. 30(3B), 1969.] *WR 140: 92*

Smith, Norman S. APPRAISAL OF CONDITION ESTIMATION METHODS FOR EAST AFRICAN UNGULATES. *East African Wildl. J.* 8: 123-129. Aug. 1970. *WR 140: 92*
[Ariz. Coop. Wildl. Res. Unit, Tucson.]

Stewart, D. R. M., and Joyce Stewart. FOOD PREFERENCE DATA BY FAECAL ANALYSIS FOR AFRICAN PLAINS UNGULATES. *Zool. Africana* 5(1): 115-129. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 92*

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Stubbe. DIE ALTERSBEDINGTE GEHÖRNENTWICKLUNG BEIM EUROPÄISCHEN REHWILD *(CAPREOLUS C. CAPREOLUS).* [THE AGE DEPENDENT DEVELOPMENT OF THE ANTLERS OF THE EUROPEAN ROE DEER *(CAPREOLUS C. CAPREOLUS).*] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 28: 293-308. 1965/1966. [From Biol. Abstr. 51(19), 1970. In German.] *WR 140: 92*

Taylor, Charles R., and Geoffrey M. O. Maloiy. THE EFFECT OF DEHYDRATION AND HEAT STRESS ON INTAKE AND DIGESTION OF FOOD IN SOME EAST AFRICAN BOVIDS. *VIII Intern. Congr. Game Biol.* p. 325. 1970. English and Russian abstracts only. *WR 140: 92*
[Mus. Comp. Zool., Harvard Univ., Cambridge, Mass.]

Telfer, Edmund S. WINTER HABITAT SELECTION BY MOOSE AND WHITE-TAILED DEER. *J. Wildl. Mgmt.* 34(3): 553-559, 3 figs. July 1970. *WR 140: 92*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Abstract: In January, 1967, activity of white-tailed deer *(Odocoileus virginianus)* in the central New Brunswick lowlands was concentrated in dense-canopied forest types with a

high proportion of conifers. Moose *(Alces alces)* avoided these types in favor of more open forests. In March, 1967, most of the activity of both species occurred in stands of the dense coniferous type. Snow depths in January ranged from 28 to 48 cm, in March, from 76 to 112 cm. Although the mean March snow depth in the dense conifer type did not differ significantly *(P<0.05)* from that of the other types, 83% of a series of systematic depth samples in this type were less than the maximum depth at cervid tracks. Only 33% of depths in the other types were less than this value. Deer and moose used 22% of the total study area in March. They were essentially exclusive in their use of habitat, sharing only 1% of the area.

Vilkitis, James R., and Robert H. Giles, Jr. VIOLATION SIMULATION AS A TECHNIQUE FOR ESTIMATING ILLEGAL CLOSED-SEASON BIG GAME KILL. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 83-87. 1970. *WR 140: 93*
[Univ. Mass., Amherst.]

Walther, Fritz. ETHOLOGISCHE BEOBACHTUNGEN BEI DER KUNSTLICHEN AUFZUCHT EINES BLESSBOCKKALBES *(DAMALISCUS DORCAS PHILIPPSI* HARPER, 1939*)*. [ETHOLOGICAL OBSERVATIONS IN THE REARING OF A BLESBOK CALF *(DAMALISCUS DORCAS PHILIPPSI* HARPER, 1939*)* UNDER FACTITIOUS CONDITIONS.] *Zool. Gart.* 36(4/5): 191-215, illus. 1969. [From Biol. Abstr. 51(15), 1970. In German.] *WR 140: 93*
[Univ. Columbia, Columbia, Mo.]

Weaver, Richard A., and Jerry L. Mensch. BIGHORN SHEEP IN NORTHWESTERN SAN BERNARDINO AND SOUTHWESTERN INYO COUNTIES. *Calif. Dept. Fish & Game Wildl. Mgmt. Admin. Rept.* no. 70-3. 16 p. Mar. 1970. *WR 140: 93*
Abstract: A survey was made of 3,570,000 acres in portions of Inyo and San Bernardino Counties. This area contains 330,000 acres of possible bighorn range and 80,000 acres of good bighorn range. Areas and springs were evaluated for their importance to bighorn. It is estimated that 54 bighorn presently exist in this area. Populations appear to have declined due to competition with burros, drought, illegal hunting and other factors. Recommendations are made for maintaining, preserving, and developing springs used by bighorn. Important bighorn lands that should be acquired by the Department are identified.

Weaver, Richard A., and Jerry L. Mensch. OBSERVED INTERACTION BETWEEN DESERT BIGHORN SHEEP, *OVIS CANADENSIS*, AND REPORTED PREDATOR SPECIES. *Calif. Fish & Game* 56(3): 206-207. July 1970. *WR 140: 93*
[Calif. Dept. Fish & Game, Sacramento.] Single occurrences of interaction between bighorn sheep and *Aquila chryaetos, Lynx rufus,* and *Canis latrans* were observed.

Wesley, D. E., K. L. Knox, and J. G. Nagy. ENERGY FLUX AND WATER KINETICS IN YOUNG PRONGHORN ANTELOPE. *J. Wildl. Mgmt.* 34(4): 908-912. Oct. 1970. *WR 140: 93*
[Colo. State Univ., Fort Collins.] Abstract: Energy flow trials with four pronghorn antelope *(Antilocapra americana)* ranging from 108 to 182 days of age, produced results similar to those described for other ruminants with the possible exceptions of total heat production and fasting metabolic rate. The comparatively high heat production may be related to the higher metabolism of younger animals. Fasting metabolic rates were above the interspecies mean of 70 kcal/ $kg^{0.75}$/24 hours; similar results have occurred with other wild ruminants. Pronghorn antelope, under the conditions tested, had a slightly higher content of body water than reported for other ruminants. This is feasible since pronghorn probably have a lower fat content than do most domestic or laboratory animals. Water flux in antelope is similar to that in domestic sheep and mule deer *(Odocoileus hemionus)*. Noticeable differences existed between water kinetics of male and female pronghorn.

Westerling, Bengt. RUMEN CILIATE FAUNA OF SEMI-DOMESTIC REINDEER *(RANGIFER TARANDUS* L.) IN FINLAND: COMPOSITION, VOLUME AND SOME SEASONAL VARIATIONS. *Acta Zool. Fennica* 127: 1-76. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 94*

Whitehead, G. Kenneth. SYNTHETIC DEER FENCING. *Field* (London) 235(6105): 137. 22 Jan. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 94*

Wilson, Grant I. SOME PARASITES OF ELK IN NEW MEXICO. *Bull. Wildl. Disease Assoc.* 5(1): 23-24. Jan. 1969. *WR 140: 94*
[P.O. Box 3518, Las Cruces, N. Mex.]

Wilson, Vivian J. DATA FROM THE CULLING OF KUDU, *TRAGELAPHUS STREPSICEROS* PALLAS IN THE KYLE NATIONAL PARK, RHODESIA. *Arnoldia* 4(36): 1-26, [2] figs. 20 Feb. 1970. *WR 140: 94*
[Natl. Mus. Rhodesia, Bulawayo, Rhodesia.]

Woolf, Alan, and David C. Kradel. HEMATOLOGICAL VALUES OF CAPTIVE ROCKY MOUNTAIN BIGHORNS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 67-68. Jan. 1970. *WR 140: 94*
[Rachelwood Wildl. Res. Preserve, New Florence, Pa.]

Woolf, Alan, David C. Kradel, and George R. Bubash. MYCOPLASMA ISOLATES FROM PNEUMONIA IN CAPTIVE ROCKY MOUNTAIN BIGHORN SHEEP. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 169-170. July 1970. *WR 140: 94*
[Rachelwood Wildl. Res. Preserve, New Florence, Pa.]

Worley, David E., Richard E. Barrett, Paul J. A. Presidente, and Richard H. Jacobson. THE ROCKY MOUNTAIN ELK AS A RESERVOIR HOST FOR PARASITES OF DOMESTIC ANIMALS IN WESTERN MONTANA. In: *(Proceedings of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 348-350. July 1969. *WR 140: 94*
[Mont. State Univ., Bozeman.] The occurrence of parasites common to both elk and domestic ruminants is discussed.

Zablocki, M. A. [AUROCHS ON CULTIVATED LAND.] *VII Intern. Congr. Game Biol.* p. 369-376. 1967. In Russian with French summ. *WR 140: 94*

Žirnov, L. V. [SAIGA AND ITS EXPLOITATION IN THE USSR.] *VIII Intern. Congr. Game Biol.* p. 277-281. 1970. In Russian with English summ. *WR 140: 94*
[Central. Lab. Ohrany Prirody, Moscow, USSR.]

DEER (Odocoileus)

Anderson, David R., and William M. Samuel. *EIMERIA* (PROTOZOA: EIMERIIDAE) FROM WHITE-TAILED DEER *ODOCOILEUS VIRGINIANUS* IN PENNSYLVANIA, TEXAS, AND WISCONSIN, WITH DESCRIPTIONS OF TWO NEW SPECIES. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 351-356, 4 figs. July 1969. *WR 140: 94*
[Pa. State Univ., Uniontown.] Fecal samples were collected from white-tailed deer, *Odocoileus virginianus*, in Pennsylvania, Texas, and Wisconsin. Four species of *Eimeria* which have not been reported previously from white-tailed deer were found. Two new species, *E. virginianus* and *E. madisonensis* are described, while *E. mccordocki* and *E. odocoilei* are compared with their original descriptions from mule deer, *Odocoileus hemionus*. *Eimeria mccordocki* and *E. odocoilei* were found in deer from all three states, *E. virginianus*, in deer from Pennsylvania and Wisconsin, and *E. madisonensis*, only from Wisconsin deer.--From abstr.

XUM

Andrews, Richard D. SURVEILLANCE FOR LEPTOSPIROSIS IN AN ILLINOIS DEER HERD. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 174-181, 3 figs. July 1969. *WR 140: 95*

[Eastern Ill. Univ., Charleston.] Abstract: Serologic tests for leptospiral antibodies were conducted on 3236 sera from white-tailed deer killed in Pope County, Illinois from 1957 through 1968. Antibodies were detected to *Leptospira pomona* in 162 (5.0%) samples. The percentage of reactors was significantly less in female deer and in fawns of both sexes. The distribution of reactors in the county showed a reactor incidence (reactors/1000 deer tested) of 103 in areas with lower deer densities and higher cattle densities. The incidence in areas with more deer and fewer cattle ranged from 14 to 44.

Beaudoin, R. L., W. M. Samuel, and C. P. A. Strome. A COMPARATIVE STUDY OF THE PARASITES IN TWO POPULATIONS OF WHITE-TAILED DEER. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 56-63, 2 figs. Jan. 1970. *WR 140: 95*

[Naval Med. Res. Inst., Bethesda, Md.] Abstract: The study compares parasite prevalence in two geographically separated populations of white-tailed deer in central Pennsylvania. Differences in prevalence were found for certain of the parasites studied. Characteristics of curves comparing prevalence with host-age group, however, were remarkably similar for individual parasites from both populations. Prevalence increased with host age for certain species of parasite and decreased or remained constant for others. Some of the underlying biological properties of the infections which may be responsible for the characteristics of the age specific prevalence curves are discussed.

Behrend, Donald F., George F. Mattfeld, William C. Tierson, and Joseph E. Wiley III. PROGRESS IN DEER DENSITY CONTROL FOR COMPREHENSIVE MANAGEMENT OF AN ADIRONDACK FOREST. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 1-18, 1 fig. 1970. *WR 140: 95*

[Huntington Wildl. Forest Sta., Newcomb, N.Y.]

Behrend, Donald F., George F. Mattfeld, William C. Tierson, and Joseph E. Wiley III. DEER DENSITY CONTROL FOR COMPREHENSIVE FOREST MANAGEMENT. *J. Forestry* 68(11): 695-700, 1 fig. Nov. 1970. *WR 140: 95*

[Huntington Wildl. Forest Sta., Newcomb, N.Y.] A study of white-tailed deer *(Odocoileus virginianus)* densities compatible with both silvicultural and wildlife management objectives was initiated on a 5,216-acre area in 1966. Deer densities were estimated from drives before each hunting season and intensive public hunting was employed to control deer density. In October, 1966, a deer density of 27 deer per square mile was prohibiting growth, above three feet, of hardwoods valuable for timber and deer browse. With a 1967 density of 17 deer per square mile, growth of previously browsed hardwoods provided a stocking of 9,200 stems (three feet and over) per acre by June, 1968. Observation of vegetation continues for changes under reduced deer densities, estimated at 13 and 12 deer per square mile in 1968 and 1969, respectively. Annual harvests of 56, 44, 42, and 27% of the estimated populations were obtained from 1966 through 1969 through public hunting involving up to 200 hunters per day.--From abstr.

Blair, R. M., and E. A. Epps, Jr. SEASONAL DISTRIBUTION OF NUTRIENTS IN PLANTS OF SEVEN BROWSE SPECIES IN LOUISIANA. *USDA Forest Serv. Res. Pap. SO-51.* 35 p., 8 figs. 1969. *WR 140: 95*

Abstract: Contents of dry matter, protein, ether extract, crude fiber, nitrogen-free extract, ash, calcium, and phosphorus were determined for 2 years in leaves, twig tips, and twig bases. Species studied were American beautyberry, sweetgum, blackgum, common greenbrier, yellow jessamine, loblolly pine, and common sweetleaf.

Bolte, John R., Jakie A. Hair, and Joe Fletcher. WHITE-TAILED DEER MORTALITY FOLLOWING TISSUE DESTRUCTION INDUCED BY LONE STAR TICKS. *J. Wildl. Mgmt.* 34(3): 546-552, 1 fig. July 1970. *WR 140: 96*

[Okla. State Univ., Stillwater.] Abstract: The importance of lone star ticks *(Amblyomma americanum)* in white-tailed deer *(Odocoileus virginianus)* fawn mortality was studied at the Cookson Hills Wildlife Refuge of eastern Oklahoma during June and July, 1968-69. At the time of this study, there was an estimated deer population of 900 animals on the 14,000-acre refuge. Of 18 fawns less than 6 weeks old captured during 1968, 17% had gross tissue damage around the eyes and head, were totally blind, and would obviously have died. Projected losses during 1968 were 34%. Radio-transmitters attached to 11 newborn fawns during 1969 aided in demonstrating tick-induced losses. The cause of death in 4 fawns was shown to be tissue destruction associated with tick feeding and secondary infection.

Boozer, Reuben Bryan. CEMENTUM ANNULI VERSUS TOOTH WEAR AGING OF THE WHITE-TAILED DEER OF ALABAMA. *Ph.D. thesis, Auburn Univ.* 115 p. 1969. [From Dissertation Abstr. Intern. 30(8B), 1970.] *WR 140: 96*

A comparison of cementum annuli aging of white-tailed deer to the established method of age determination based on tooth eruption and wear was made on 312 deer. Overall age agreement by the two methods was 72%.

Byford, James Lloyd. MOVEMENTS AND ECOLOGY OF WHITE-TAILED DEER IN A LOGGED FLOODPLAIN HABITAT. *Ph.D. thesis, Auburn Univ.* 157 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 96*

Coblentz, Bruce E. FOOD HABITS OF GEORGE RESERVE DEER. *J. Wildl. Mgmt.* 34 (3): 535-540, 1 fig. July 1970. *WR 140: 96*

[Univ. Mich., Ann Arbor.] Abstract: Rumen contents from 87 George Reserve white-tailed deer *(Odocoileus virginianus)* were analyzed by weight, volume, and point-frame sampling. The mean identified fraction for all deer was 7.80 ± 0.66% by volume, 6.44 ± 0.78% by weight, and 13.49 ± 0.74% by point-frame analysis. Results of the three methods of analysis were highly correlated *($P<0.01$)*. Woody browse made up 68.3% of the diet by volume, 74.1% by weight, and 77.9% by point-frame analysis. The most important species were leatherleaf *(Chamaedaphne calyculata)*, oak leaf *(Quercus* spp.*)*, ground juniper *(Juniperus communis)*, red cedar *(Juniperus virginiana)*, and redosier dogwood *(Cornus stolonifera)*. Together these species comprised 40.5% of the identified material by volume and 37.7% by weight. Grasses and forbs were found to be more important than is generally believed. A strong relationship existed between the amount of herbaceous material ingested and the amount of snow cover. With no snow cover, the diet had a mean of 63.4% herbaceous food; at approximately 3 inches snow depth, herbaceous material disappeared.

Connolly, Guy E. A POPULATION MODEL FOR DEER ON THE HOPLAND FIELD STATION, MENDOCINO COUNTY, CALIFORNIA. *M.A. thesis, Sonoma State Coll.* (Calif.). v + 54 p. June 1970. *WR 140: 96*

[Hopland Field Sta., Rt. 1, Box 53, Hopland, Calif.] Minimum populations of 740, 690, 600, and 480 deer in May, July, October, and April, respectively, appeared to be required to support the annual known mortality of 41 legal bucks during the 3-year study period, assuming that the average birth rate, sex and age composition, and mortality ratios in the population were accurately determined. These estimates indicate an annual mortality rate of 35%. The mortality rate attributable to hunting of legal bucks during the regular deer season was estimated to be 5%, while an additional 10% was removed by trapping and collecting for research purposes. This annual man-caused mortality, amounting to slightly less than half of the total estimated mortality, appears to stimulate a higher fawn survival rate than that observed elsewhere in Mendocino County where legal hunting is limited to adult males. It is suggested that deer populations in this area can sustain much higher harvest levels than those currently achieved by the exclusive hunting of adult males.--From abstr.

XUM

Cook, R. S., and D. O. Trainer. EXPERIMENTAL EXPOSURE OF DEER TO CALIFORNIA ENCEPHALITIS VIRUS. *Bull. Wildl. Disease Assoc.* 5(1): 3-7. Jan. 1969. *WR 140: 97*

[Univ. Wis., Green Bay.] Abstract: To determine the susceptibility of white-tailed deer *(Odocoileus virginianus)* to California encephalitis virus (CEV), four captive deer were experimentally exposed by different routes and the clinical, virological and serological responses recorded. None of the four deer developed a detectable viremia or clinical signs of disease. One deer exposed subcutaneously and one exposed intravenously developed circulating antibody which persisted; the deer exposed intranasally and orally did not. Rechallenge of a deer with detectable antibody resulted in a typical anamnestic antibody response. The significance of CEV to deer and the possibility of utilizing deer as sentinels for CEV monitoring are discussed.

Cook, R. S., W. C. Glazener, and D. O. Trainer. WHITE-TAILED DEER, A NEW HOST FOR *AMBLYOMMA INORNATUM*. *Bull. Wildl. Disease Assoc.* 5(2): 108. Apr. 1969. *WR 140: 97*

[Univ. Wis., Green Bay.]

Crispens, Charles G., Jr., and J. Kenneth Doutt. STUDIES OF THE SEX CHROMATIN IN THE WHITE-TAILED DEER. *J. Wildl. Mgmt.* 34(3): 642-644, 2 figs. July 1970. *WR 140: 97*

[Univ. Ala., Birmingham.] Abstract: The results of our study confirm that a sexual dimorphism of nuclei exists in neurons of the white-tailed deer *(Odocoileus virginianus)*. Further, they indicate that a sex difference is not recognizable in cells of the skin, salivary gland, and adrenal medulla. The implications of these findings are discussed with emphasis on application of the sex-chromatin technique to problems of intersexuality in deer.

Cushwa, Charles T., Robert L. Downing, Richard F. Harlow, and David F. Urbston. THE IMPORTANCE OF WOODY TWIG ENDS TO DEER IN THE SOUTHEAST. *USDA Forest Serv. Res. Pap. SE-67*. 12 p. Aug. 1970. *WR 140: 97*

[Pa. Coop. Wildl. Res. Unit, University Park.] Abstract: Year-round samples of 489 deer rumina from six Southeastern States were analyzed to determine the relative importance of various types of foods. Green material, fruits, mast, and mushrooms were all important foods at every season of the year. The least important food was woody twigs, which did not occur in as much as 0.5 of 1 percent of the food in the fall-winter sample of 416 deer. Virtually all browsing of twigs takes place during the spring and summer, when this part of the plant is succulent. Future habitat research and management in the Southeast should recognize all possible sources of food for deer, not just the woody component.

Davidson, Walter H. DEER PREFER PINE SEEDLINGS GROWING NEAR BLACK LOCUST. *USDA Forest Serv. Res. Note NE-111*. 4 p. 1970. *WR 140: 97*

[NE Forest Expt. Sta., Kingston, Pa.] Abstract: The presence of volunteer black locust seems to make some pine species on a bituminous coal spoil more palatable to white-tailed deer. Seedlings of jack pine, pitch pine, and Austrian pine were browsed more heavily when within 10 feet of a black locust than when farther away. The nitrogen produced by the black locust may have caused more succulent tissue in the pines. Proximity of black locust did not seem to strongly influence browsing of other pine species in the study area.

Davis, Jerry Wayne. INFESTATION OF PARASITIC DEER KEDS (DIPTERA-HIPPOBOSCIDAE) ON WHITE-TAILED DEER IN EAST TEXAS. *M.S. thesis, Stephen F. Austin State Coll.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16 (3): 368-384. 1970.) *WR 140: 97*

Debbie, J. G. *SALMONELLA TYPHUMURIUM* INFECTION IN CAPTIVE WHITE-TAILED DEER FAWNS. *Bull. Wildl. Disease Assoc.* 4(1): 12. Jan. 1968. *WR 140: 98*
[Univ. Guelph, Guelph, Ontario, Canada.] Four captive *Odocoileus virginianus* died shortly after arrival. Source of the infection was not determined.

Dills, Gary G. EFFECTS OF PRESCRIBED BURNING ON DEER BROWSE. *J. Wildl. Mgmt.* 34(3): 540-545, 1 fig. July 1970. *WR 140: 98*
[Univ. Ala., University.] Abstract: The effects of prescribed burns on the quantity and quality of deer *(Odocoileus virginianus)* browse were studied during March, 1966, 1967, and 1968, on the Catoosa Wildlife Management Area, Tennessee. The 1968 burn contained slightly less available browse than the unburned site. Burns made during 1967 and 1966 showed increases of 425.3 and 757.5 lb of green browse per acre, respectively, when compared with the unburned study area. A qualitative study of three browse species, red maple *(Acer rubrum)*, sourwood *(Oxydendrum arboreum)*, and sassafras *(Sassafras albidum)*, showed no significant effects of burning on nutritive values. Potassium and phosphorus content of the browse species was highest in June and lowest in September and January. No seasonal trend was noticed in sodium content. Calcium content was lowest in June and increased in content during September and January.

Eabry, Steve, editor. A GLOSSARY OF DEER TERMINOLOGY. *Terminology Com. Northeastern Deer Study Group.* 31 p. 1970. *WR 140: 98*
[Wildl. Res. Lab., Delmar, N.Y.] "It is the thought of the Terminology Committee that this Glossary be considered an interim document. We feel that most terms used in deer work in the Northeast have been considered and defined, but we would like to see this work carried further to include terms used throughout North America and possibly to stimulate a review by The Wildlife Society of all wildlife terms. For this reason, the Glossary is being submitted to the Northeast Section of The Wildlife Society for review and permission to submit it to The Wildlife Society for further review and possible acceptance as a Society publication."

Eckroade, Robert J., Gabriele M. Zu Rhein, and William Foreyt. MENINGEAL WORM INVASION OF THE BRAIN OF A NATURALLY INFECTED WHITE-TAILED DEER. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 430-436, 8 figs. Oct. 1970. *WR 140: 98*
[Univ. Wis., Madison.]

Emerson, H. R., and W. T. Wright. THE ISOLATION OF A BABESIA IN WHITE-TAILED DEER. *Bull. Wildl. Disease Assoc.* 4(4): 142-143. Oct. 1968. *WR 140: 98*
[Texas A&M Univ., College Station.]

Erickson, James A., Allen E. Anderson, Dean E. Medin, and David C. Bowden. ESTIMATING AGES OF MULE DEER--AN EVALUATION OF TECHNIQUE ACCURACY. *J. Wildl. Mgmt.* 34(3): 523-531, 2 figs. July 1970. *WR 140: 98*
[Alaska Dept. Fish & Game, Fairbanks.] Abstract: Ages estimated from (1) molar tooth ratios (Robinette et al. 1957), (2) visual evaluation of molariform tooth wear at a check station, and (3) regression of eye lens weight *(Y)* on age *(X)*, were compared to assumed known ages obtained from counts of cementum annuli in the first permanent incisor of mule deer *(Odocoileus hemionus)*. Ages of 62 of 100 mule deer about 26 months and older were not correct when estimated to the nearest year from the molar tooth ratios. Ages of 43 of 116 (37%) were not correct when estimated from visual evaluations of permanent molariform tooth wear at a check station and assigned to one of 5 age groups (2, 3+4, 5+6, 7+8, and 9+ years). A regression of eye lens weight *(Y)* on age *(X)* for 177 mule deer of both sexes was fitted with the equation $\log_e \hat{Y} = 0.35857 - 10.94080\ 1/X$ with a correlation coefficient of -0.98. A deer whose lens weight exceeded about 0.9g, corresponding to an estimated age of 16 months from birth, had a confidence interval greater than 12 months in width and could not be assigned to a single-year age-class with 95% confidence. None of the three methods examined was found satisfactory for accurate individual age estimation.

Foreyt, William, and Daniel O. Trainer. EXPERIMENTAL HAEMONCHOSIS IN WHITE-TAILED DEER. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 35-42, 1 fig. Jan. 1970. *WR 140: 99*

[Univ. Wis., Madison.] White-tailed deer *(Odocoileus virginianus)* were successfully infected with *Haemonchus contortus* of sheep origin. The potential importance of *H. contortus* in deer populations was discussed.--From abstr.

Franzen, Robert William. THE ABUNDANCE, MIGRATION AND MANAGEMENT OF MULE DEER IN DINOSAUR NATIONAL MONUMENT. *M.S. thesis, Utah State Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 99*

Gilbert, Frederick F., and Sandra L. Stolt. VARIABILITY IN AGING MAINE WHITE-TAILED DEER BY TOOTH-WEAR CHARACTERISTICS. *J. Wildl. Mgmt.* 34(3): 532-535, 1 fig. July 1970. *WR 140: 99*

[Maine Coop. Wildl. Res. Unit, Orono.] Abstract: A sample of 682 incisor teeth collected from Maine deer *(Odocoileus virginianus)* during the 1968 hunting season was histologically prepared and the cemental annuli counted. The ages determined by this technique were compared to ages assigned under field conditions by ten biologists using the tooth-wear method. More deer were assigned to the younger age-classes (<5.5 years) and less to the older age-classes (>5.5 years) by tooth-wear characteristics than by annuli counts. The percent difference between deer assigned to each age-class by the two methods increased from 6.3% for yearlings to 100% for deer 6.5 years of age or older. Individual biologists placed an average of four deer of every ten examined into a different age-class than that determined by annuli counts.

Halls, Lowell K., [chairman]. WHITE-TAILED DEER IN THE SOUTHERN FOREST HABITAT / PROCEEDINGS OF A SYMPOSIUM AT NACOGDOCHES, TEXAS / MARCH 25-26, 1969. *Southern Forest Expt. Sta., Forest Game Comm. SE Sect. Wildl. Soc. & Stephen F. Austin State Univ.* ii + 130 p., illus. 1969. *WR 140: 99*

[Southern Forest Expt. Sta., Nacogdoches, Texas.] The following papers were presented: *History of deer and their habitat in the South*, John D. Newsom; *Population dynamics of white-tailed deer*, Walter V. Robertson; *Foods and feeding habits of white-tailed deer*, Daniel W. Lay; *Physiology and nutrition of deer in southern upland forests*, Henry L. Short; *Seasonal changes in movements of white-tailed deer*, Robert L. Downing, Burd S. McGinnes, Ralph L. Petcher, and Joshua L. Sandt; *Deer predation in North Carolina and other southeastern States*, Frank B. Barick; *Some considerations for diseases and parasites of white-tailed deer in the southeastern United States*, Frank A. Hayes and Annie K. Prestwood; *Critical factors in habitat appraisal*, William D. Zeedyk; *Deer habitat quality of major forest types in the South*, J. J. Stransky; *Agricultural clearings as sources of supplemental food and habitat diversity for white-tailed deer*, Joseph S. Larson; *Philosophy of deerherd management*, Jack A. Crockford; *Hunting methods, limits, and regulations*, Dean A. Murphy; *Managed hunts by State agencies*, A. Gordon Spratt; *Effects of timber harvest and regeneration on deerfood and cover*, V. E. Carter and S. A. Dow; *How size and distribution of cutting units affect food and cover of deer*, Burd S. McGinnes; *Short and long rotations in relation to deer management in southern forests*, Phil D. Goodrum; *Timber stand density influences food and cover*, Robert M. Blair; *Effects of hardwood control on food and cover*, E. B. Chamberlain, Jr.; *The effects of prescribed burning on deerfood and cover*, Paul A. Shrauder and Howard A. Miller; *The goals of the southern National forests in white-tailed deer management*, Donald D. Strode and Wayne J. Cloward; *The goals of State conservation agencies in deerherd management*, Frank P. Nelson; *The goals of private forest holdings in deer management*, Raymond D. Moody; *Prevention and control of damage to trees*, D. C. Denton, E. H. Hodil, and D. H. Arner; *Measuring habitat productivity*, Richard F. Harlow and James D. Whelan; *Evaluating food use--new methods and techniques*, H. S. Crawford; *Problems in censusing the white-tailed deer*, James H. Jenkins and R. Larry Marchinton; *The use of models in resource management*, Don W. Hayne; *Sociological and economic considerations in management of white-tailed deer*, E. L. Cheatum, Lonnie L. Williamson, and A. Sydney Johnson; and *Regulatory legislation and public attitude on white-tailed deer management*, Leslie L. Glasgow.

Harder, John D. EVALUATING WINTER DEER USE OF ORCHARDS IN WESTERN COLORADO. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 35-47, 3 figs. 1970. *WR 140: 100*
[Ohio Coop. Wildl. Res. Unit, Columbus.] *"Odocoileus virginianus* and *O. hemionus."*

Hesselton, William T. DEER TRAPPING AND TAGGING IN NEW YORK STATE--A PROGRESS REPORT. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 39-81, 13 figs. 1970. *WR 140: 100*
[N.Y. State Conserv. Dept., Delmar.]

Howard, Volney Ward, Jr. BEHAVIOR OF WHITE-TAILED DEER WITHIN THREE NORTHERN IDAHO PLANT ASSOCIATIONS. *Ph.D. thesis, Univ. Idaho.* 71 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 100*
High temperatures caused deer to extend their diurnal bedding periods during the summer months of 1967 and seek areas with dense cover and cooler temperatures. Either heavy rains, high winds or both caused deer to seek cover and remain inactive for extended periods. Light rains did not cause deer to seek shelter. Nocturnal feeding and bedding periods varied between animals, between days, between seasons of the year and between years.

Hungerford, C. R. RESPONSE OF KAIBAB MULE DEER TO MANAGEMENT OF SUMMER RANGE. *J. Wildl. Mgmt.* 34(4): 852-862, 3 figs. Oct. 1970. *WR 140: 100*
[Univ. Ariz., Tucson.] Abstract: The 400,000-acre summer range of the Kaibab mule deer *(Odocoileus hemionus)* has been changed by seeding, logging, fire, and range treatment. From 1962 through 1968, the summer composition of food plants was measured by line intercept transects and the deer's choice of food plants by the feeding-minutes method. Planted grasses were an important food early in summer, fungi in late summer, and trees, shrubs, and forbs were found to be used throughout the summer. Plant succession replaced planted species with native plants most rapidly in mixed conifer forest and least rapidly in burned areas. The reseeding practices, financed from hunter fees but performed on National Forest lands, resulted in improved summer deer condition and a 24.5% better fawn crop. The deer accepted the modified habitat slowly and yearling animals were often the first to appear in new feeding areas.

Issel, Charles J., Gerald L. Hoff, Daniel O. Trainer, and Wayne H. Thompson. SEROLOGIC EVIDENCE OF BUNYAMWERA GROUP ARBOVIRUS INFECTIONS IN WISCONSIN AND TEXAS DEER. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 479-482. Oct. 1970. *WR 140: 100*
[Univ. Wis., Madison.] *"Odocoileus virginianus."*

Jenney, Edwin W., Frank A. Hayes, and Curtis L. Brown. SURVEY FOR VESICULAR STOMATITIS VIRUS NEUTRALIZING ANTIBODIES IN SERUMS OF WHITE-TAILED DEER *ODOCOILEUS VIRGINIANUS* OF THE SOUTHEASTERN UNITED STATES. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 488-493. Oct. 1970. *WR 140: 100*
[Natl. Animal Disease Lab., Ames, Iowa.]

Jordan, James S. DEER HABITAT MANAGEMENT IN EASTERN FORESTS. *J. Forestry* 68(11): 692-694, illus. Nov. 1970. *WR 140: 100*
[NE Forest Expt. Sta., Warren, Pa.] Abstract: Deer habitat management in Eastern forests is concerned primarily with the management of deer food. But the present capability of such management to solve food problems has consistently been overestimated. Current management practices are of questionable value because data about their specific effects on deer are generally lacking. A research process which includes major research tasks arranged in a natural and logical progression and which leads to the development of reliable systems of deer-food management, is proposed as one method of solving current problems.

Karstad, Lars, and D. O. Trainer. *SARCOCYSTIS* IN WHITE-TAILED DEER. *Bull. Wildl. Disease Assoc.* 5(1): 25-26. Jan. 1969. *WR 140: 101*
[Univ. Guelph, Guelph, Ontario, Canada.]

Kellogg, Forest E., Annie K. Prestwood, and Robert E. Noble. ANTHRAX EPIZOOTIC IN WHITE-TAILED DEER. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 226-228. Oct. 1970. *WR 140: 101*
[Univ. Ga., Athens.]

Kingscote, Barbara F. LEPTOSPIROSIS SURVEY IN A WHITE-TAILED DEER HERD IN ONTARIO: COMPARATIVE USE OF FLUID AND PAPER DISC-ABSORBED BLOOD. *Bull. Wildl. Disease Assoc.* 5(2): 68-72, 1 fig. Apr. 1969. *WR 140: 101*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: White-tailed deer *(Odocoileus virginianus)* were sampled in a wilderness area of southern Ontario in 1965, 1966, and 1967. Serological evidence of *Leptospira pomona* and *L. grippotyphosa* infection was found. Leptospirosis has not depressed the deer population. There was a positive correlation between age and reactor rate. Paper disc-absorbed whole blood has been tested comparatively with fluid serum and found to be a useful tool for field serological surveys.

Kistner, T. P., and W. L. Hanson. TRYPANOSOMIASIS IN WHITE-TAILED DEER. *Bull. Wildl. Disease Assoc.* 5(4): 398-399. Oct. 1969. *WR 140: 101*
[Univ. Ga., Athens.]

Kistner, Theodore P., and Frank A. Hayes. WHITE-TAILED DEER AS HOSTS OF CATTLE FEVER-TICKS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 437-440. Oct. 1970. *WR 140: 101*
[Univ. Ga., Athens.]

Knierim, Philip Glasgow. EFFECT OF IMPROVEMENT CUTTINGS ON THE QUANTITY AND QUALITY OF WOODY DEER BROWSE. *M.S. thesis, W. Va. Univ.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 101*

Krefting, L. W., and R. L. Phillips. IMPROVING DEER HABITAT IN UPPER MICHIGAN BY CUTTING MIXED-CONIFER SWAMPS. *J. Forestry* 68(11): 701-704, 1 fig. Nov. 1970. *WR 140: 101*
[Univ. Minn., St. Paul.] Abstract: The habitat for deer was evaluated in terms of browse production, shelter value, and deer use in a study of cutting methods in mixed-conifer swamps. Cutting treatments tested were diameter-limit, selection, shelterwood, block, and strip cutting. The requirements for deer were best met by strip cutting.

Larson, Keith DeVere. THE SIGNIFICANCE OF AGE DISTRIBUTIONS OF EXPLOITED WHITE-TAILED DEER POPULATIONS. *Ph.D. thesis, Iowa State Univ.* 242 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 101*

Lynn, Teddy Ethan, Jr. SOME EFFECTS OF TIMBER CUTTING ON DEER BROWSE AVAILABILITY IN THE CHOCCOLOCCO WILDLIFE MANAGEMENT AREA, ALABAMA. *M.S. thesis, Auburn Univ.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 101*

Marchinton, Robert L. NEW DEVICE FOR DETERMINING DEER MOVEMENTS. Reprint from *Highlights Agr. Res.* 13(3). 1 p. Fall 1966. *WR 140: 102*
[Auburn Univ., Auburn, Ala.] Miniature collar-mounted transmitters, which broadcast radio signals, are used for tracking deer movements. New information on movement behavior obtained from this method is reported. Range data are also given.

Marchinton, Robert L., and Maurice F. Baker. FOOD HABITS OF A DEER AS OBSERVED WITH THE AID OF TELEMETRY. Reprint from *J. Ala. Acad. Sci.* 38. 1 p. July 1967. *WR 140: 102*
[Auburn Univ., Auburn, Ala.] A free-ranging deer was instrumented with a radio transmitter and used to study food habits. Foods utilized are reported.

Mautz, William Ward. INVESTIGATION OF SOME DIGESTIVE PARAMETERS OF THE WHITE-TAILED DEER USING THE RADIOISOTOPE ^{51}CHROMIUM. *Ph.D. thesis, Mich. State Univ.* 81 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 102*
Of the natural foods, sumac inflorescences were determined to provide the most energy. ^{51}Cr was also found to yield pertinent data concerning the specific area of the gastrointestinal tract in which dry matter absorption occurs. By means of autopsies on 2 deer which had consumed a radioactive standard ration, it was determined that a surprisingly high proportion of materials leaving the small intestine enter the cecal pouch (>70%).

McCarty, Jack Doyle. DEER BROWSE UTILIZATION IN AN EAST TEXAS FOREST WITH AND WITHOUT MAST-PRODUCING TREES. *M.S. thesis, Stephen F. Austin State Coll.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 102*

McDowell, Robert D. PHOTOPERIODISM AMONG BREEDING EASTERN WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS). Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 19-38, 3 figs. 1970. *WR 140: 102*
[Univ. Conn., Storrs.]

McNeil, Richard J. A SOCIAL SURVEY TO DETERMINE ATTITUDES TOWARD DEER. *VIII Intern. Congr. Game Biol.* p. 297-299. 1970. In English with Russian summ. *WR 140: 102*
[Cornell Univ., Ithaca, N.Y.] *"Odocoileus virginianus."*

Michael, Edwin D. ACTIVITY PATTERNS OF WHITE-TAILED DEER IN SOUTH TEXAS. *Texas J. Sci.* 21(4): 417-428. 12 June 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 102*

Miller, Frank L. ABERRANT BEHAVIOUR BY A DOMINANT MALE BLACK-TAILED DEER. *Canadian Field-Nat.* 84(1): 57-58. Jan.-Mar. 1970. *WR 140: 102*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: On June 9, 1963, the dominant buck of a group of six male black-tailed deer *(Odocoileus hemionus columbianus)*, encountering a doe with two female fawns, attempted to add one of the fawns to his sub-dominant associates. This behavior was unusual and is believed to be aberrant.

Müller-Schwarze, D., and C. Müller-Schwarze. SPIELVERHALTEN UND ALLGEMEINE AKTIVITAT BEI SCHWARZWEDELHIRSCHEN. [PLAY BEHAVIOR AND GENERAL ACTIVITY OF BLACK-TAILED DEER *(ODOCOILEUS HEMIONUS COLUMBIANUS).*] *Bonner Zool. Beitr.* 20 (1-3): 282-289, illus. 1969. [From Biol. Abstr. 51(18), 1970. In German.] *WR 140: 102*
[Utah State Univ., Logan.]

XUM

Murphy, Dean A., and Leroy J. Korschgen. REPRODUCTION, GROWTH, AND TISSUE RESIDUES OF DEER FED DIELDRIN. *J. Wildl. Mgmt.* 34(4): 887-903, 1 fig. Oct. 1970. *WR 140: 103*

[Mo. Dept. Conserv., Jefferson City.] Abstract: Feeding tests were conducted from January, 1966, to January, 1969, to ascertain the effects of daily ingestions of sublethal amounts of dieldrin on white-tailed deer *(Odocoileus virginianus)*. Groups of deer on 0 ppm dieldrin (controls), 5 ppm, and 25 ppm dieldrin were maintained at these respective levels, as were their progeny. Treated food was readily accepted. Dieldrin intoxication was not observed, and 9 of 10 animals of each group survived 3 years of treatment. No differences in conception or in utero mortality were found between groups. Fawns from dieldrin-fed does were smaller at birth and greater post-partum mortality occurred. Fertility of male progeny was not affected. Growth was slower and remained reduced in dieldrin-treated females which were immature when the study began. Hematologic values and serum protein concentrations were not significantly *(P>0.05)* related to treatment. Liver/body weight ratios were significantly *(P<0.05)* larger for the 25-ppm-dieldrin group. Pituitary glands were smaller and thyroids were larger in dieldrin-fed deer. Weight gains of fawns were significantly *(P<0.05)* reduced 2 of 3 years in dieldrin-treated groups. Placental transfer of dieldrin occurred. Whole milk from does fed 25 ppm dieldrin contained residues of 17 ppm. Residue levels in brain, liver, and thigh muscle tissues showed no evidence of increasing with length of treatment, but showed definite relationships to levels of dieldrin in daily diets. Nursing fawns had higher residues in brain tissues than did older deer on 5 ppm and 25 ppm dieldrin. Highest brain residues (12.60 and 12.10 ppm, wet weight) occurred in fawns only a few days of age at death. Equilibrium between ingestion and storage or excretion of dieldrin occurred prior to 200 days and continued until nearly 1,100 days. There was no evidence of a sharp decline in residues after a long period of continued dosage. Daily ingestion of 100 and 200 ppm of dieldrin proved fatal to yearling male deer at 27 and 22 days, respectively.

Nixon, Charles M., Milford W. McClain, and Kenneth R. Russell. DEER FOOD HABITS AND RANGE CHARACTERISTICS IN OHIO. *J. Wildl. Mgmt.* 34(4): 870-886, 1 fig. Oct. 1970. *WR 140: 103*

[Ill. Nat. Hist. Surv., Urbana.] Abstract: Deer *(Odocoileus virginianus)* food habits, the relative abundance of deer foods, and land use patterns important to deer were investigated in Ohio from January, 1965, through July, 1968. A total of 332 rumens was collected and 380 field observations made of deer food habits. Combining deer rumen analysis and field observations, the important foods in decreasing order of occurrence were: wild crab-apple, corn, sumac seeds and stems, Japanese honeysuckle leaves and stems, grasses, greenbrier fruits and leaves, clover leaves, soybean leaves and beans, jewelweed leaves, acorns, and dogwood drupes and stems. Ohio deer were not heavily dependent on woody browse even in winter. Crop residues were most important as deer food in northern Ohio, less so in southeastern Ohio (Hill Counties). Northwest Ohio deer were found to ingest higher levels of crude protein and fats compared with deer in eastern Ohio. Northwest Ohio deer were significantly heavier *(P<0.05)* in weight than deer from eastern Ohio. In eastern Ohio, only northeast adult females were significantly heavier than Hill County adult females. Based on an approximate chemical analysis of deer diets in each region of Ohio, the greater ingestion of cultivated crops by northwest Ohio deer accounted for size differences between northwest and eastern Ohio deer. Deer utilization of non-cultivated foods was related to food availability in each region. Deer distribution in western and northwestern Ohio is limited by a lack of forest cover. In eastern Ohio, forest land is still increasing but forest succession is eliminating the old field types most important as deer feeding areas. On public hunting areas where deer management is important, a minimum of 10% of each 1,500-acre forested unit should be managed as old field remnants. Browse cutting for deer is not necessary in hardwood stands under timber management. Evenage regeneration silviculture, using clearcuts, will provide abundant browse for deer but should be applied as

clearcuts smaller than 50 acres. Sumacs, roses, elders, shrubby dogwoods, Japanese honeysuckle, greenbriers, and wild hydrangea are considered preferred browse species in Ohio. Use of these species as indicators in a continuous range inventory should provide the necessary data for beginning deer range appraisal in Ohio.

Noble, Robert Edwin. REPRODUCTIVE CHARACTERISTICS OF THE MISSISSIPPI WHITE-TAILED DEER WITH NOTES ON HISTORY, WEIGHTS AND AGE-CLASS COMPOSITION. *Ph.D. thesis, Mich. State Univ.* 165 p. 1969. [From Dissertation Abstr. Intern. 30 (6B), 1969.] *WR 140: 104*

Palmer, Walter L., and Dennis R. King. SOUTH FOX ISLAND DEER--1969. *Mich. Dept. Nat. Resources Res. & Development Rept.* no. 204. 11 p. 30 Mar. 1970. *WR 140: 104*
South Fox Island was used to study the relationships between habitat and deer because of the ease in controlling extraneous factors. Vegetation utilization and hunting statistics since 1965 were analysed. Special attention was given to deer herd structure and condition.

Prestwood, Annie K. NEUROLOGIC DISEASE IN A WHITE-TAILED DEER MASSIVELY INFECTED WITH MENINGEAL WORM *(PNEUMOSTRONGYLUS TENUIS). J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 84-86, 2 figs. Jan. 1970. *WR 140: 104*
[Univ. Ga., Athens.]

Quay, W. B., and Dietland Müller-Schwarze. FUNCTIONAL HISTOLOGY OF INTEGUMENTARY GLANDULAR REGIONS IN BLACK-TAILED DEER *(ODOCOILEUS HEMIONUS COLUMBIANUS). J. Mammal.* 51(4): 675-694, 9 figs. Nov. 1970. *WR 140: 104*
[Univ. Calif., Berkeley.]

Raddi, Arvind Govind. THE PELAGE OF COLUMBIAN BLACK TAIL DEER *ODOCOILEUS HEMIONUS COLUMBIANUS* (RICHARDSON). *Ph.D. thesis, Univ. British Columbia.* 1968. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa. [From Dissertation Abstr. Intern. 30(3B), 1969.] *WR 140: 104*

Robinson, R. M., R. J. Hidalgo, W. S. Daniel, D. W. Rideout, and R. G. Marburger. SALMONELLOSIS IN WHITE-TAILED DEER FAWNS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 389-396, 2 figs. Oct. 1970. *WR 140: 104*
[Texas A&M Univ., College Station.]

Samuel, William Morris. PARASITES OF THE WHITE-TAILED DEER IN SOUTH TEXAS. *Ph.D. thesis, Univ. Wis.* 204 p. 1969. [From Dissertation Abstr. Intern. 30 (9B), 1970.] *WR 140: 104*
Twelve arthropod, 12 helminth, and 3 protozoan parasites of white-tailed deer *(Odocoileus virginianus)* were detected. The presence and abundance of these parasites were compared to: (1) several host factors such as age, sex, and behavior; (2) various external environmental factors including plant habitat-density, temperature, and rainfall; and (3) parasite parameters such as age structure and sex ratios.

Samuel, W. M., and W. C. Glazener. MOVEMENT OF WHITE-TAILED DEER FAWNS IN SOUTH TEXAS. *J. Wildl. Mgmt.* 34(4): 959-961. Oct. 1970. *WR 140: 104*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Samuel, W. M., and D. O. Trainer. *PULEX PORCINUS* JORDAN AND ROTHSCHILD, 1923 (SIPHONAPTERA: PULICIDAE), AN OCCASIONAL PARASITE OF WHITE-TAILED DEER FROM THE WELDER REFUGE IN SOUTHERN TEXAS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 182-183. July 1970. *WR 140: 104*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Samuel, W. M., and D. O. Trainer. *AMBLYOMMA* (ACARINA: IXODIDAE) ON WHITE-TAILED DEER, *ODOCOILEUS VIRGINIANUS* (ZIMMERMANN), FROM SOUTH TEXAS WITH IMPLICATIONS FOR THEILERIASIS. *J. Med. Entomol.* 7(5): 567-574, 2 figs. 15 Nov. 1970. *WR 140: 105*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Sandt, Joshua L. THE INFLUENCE OF A CLEAR-CUT AREA ON A CONFINED DEER HERD IN A PREDOMINANTLY GRASSLAND HABITAT. *M.S. thesis, Va. Polytech. Inst.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 105*

Seger, Cameron L., John D. Newsom, Earl E. Roth, and W. R. Hutchinson, Jr. CHRONIC TOXIC HEPATITIS IN DEER FROM A LOUISIANA COASTAL MARSH. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 295-296, 3 figs. July 1969. *WR 140: 105*
[La. State Univ., Baton Rouge.] *Crotalaria* and *Heliotropium* poisoning may have been a contributing factor to the white-tailed deer die-off. Such die-offs occur periodically and are often associated with prolonged dry weather.

Short, Henry L., and John C. Reagor. CELL WALL DIGESTIBILITY AFFECTS FORAGE VALUE OF WOODY TWIGS. *J. Wildl. Mgmt.* 34(4): 964-967, 2 figs. Oct. 1970. *WR 140: 105*
[Southern Forest Expt. Sta., Nacogdoches, Texas.] Abstract: Food and fecal samples collected from digestion trials with mule deer *(Odocoileus hemionus)* were analyzed according to Van Soest's comprehensive system of feed analyses. The true digestibility coefficient of the cell contents of formulated rations and woody twigs was as great for deer as it is for herbages eaten by domestic ruminants. The true digestibility coefficient of the cell wall constituents of woody twigs, however, was lower than that for herbages.

Shotts, Emmett B., Jr., and Frank A. Hayes. LEPTOSPIRAL ANTIBODIES IN WHITE-TAILED DEER OF THE SOUTHEASTERN UNITED STATES. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 295-298. Oct. 1970. *WR 140: 105*
[Univ. Ga., Athens.]

Siegler, Hilbert R., editor. THE WHITE-TAILED DEER OF NEW HAMPSHIRE. *N.H. Fish & Game Dept. Survey Rept.* no. 10. xi + 256 p., 63 figs. 1968. *WR 140: 105*
Contributing authors of this book are Helenette Silver, David L. White, Henry A. Laramie, Jr., and Hilbert R. Siegler. The major topics of discussion are: Environmental conditions, History, The New Hampshire herd, Condition and productivity of New Hampshire deer, The New Hampshire hunter and his harvest, Values of New Hampshire deer, Deer nutrition studies, Public relations, Deer management and recommendations in New Hampshire, and The outlook.

Stith, Lloyd G. DEER DAMAGE TO CITRUS TREES AND CONTROL WITH REPELLENT SPRAYS. *M.S. thesis, Univ. Fla.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 105*

Studier, E. H., and W. G. Ewing. PHENYLKETONURIA IN A MULE DEER *(ODOCOILEUS HEMIONUS). Bull. Wildl. Disease Assoc.* 4(4): 143. Oct. 1968. *WR 140: 105*
[N. Mex. Highlands Univ., Las Vegas.]

Thomas, F. C., and D. O. Trainer. BLUETONGUE VIRUS: (1) IN PREGNANT WHITE-TAILED DEER (2) A PLAQUE REDUCTION NEUTRALIZATION TEST. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 384-388. Oct. 1970. *WR 140: 105*
[Univ. Wis., Madison.]

Thomas, J. W., R. M. Robinson, and R. G. Marburger. STUDIES IN HYPOGONADISM IN WHITE-TAILED DEER OF THE CENTRAL MINERAL REGION IN TEXAS. *Texas Parks & Wildl. Dept. Tech. Ser.* no. 5. vi + 50 p., 32 figs. 1970. *WR 140: 106*
[NE Forest Expt. Sta., Morgantown, W. Va.]

Ullrey, D. E., W. G. Youatt, H. E. Johnson, L. D. Fay, B. L. Schoepke, and W. T. Magee. DIGESTIBLE AND METABOLIZABLE ENERGY REQUIREMENTS FOR WINTER MAINTENANCE OF MICHIGAN WHITE-TAILED DOES. *J. Wildl. Mgmt.* 34(4): 863-869, 1 fig. Oct. 1970. *WR 140: 106*
[Mich. State Univ., East Lansing.] Abstract: Eighteen pregnant white-tailed does *(Odocoileus virginianus)* were assigned to 6 trios on the basis of weight. They were penned individually out-of-doors from February 5 to April 9, 1969, and were fed a pelleted diet with a gross energy density of 4.20 kcal/g and a crude protein percentage of 17.6. One member of each trio received the diet ad libitum; the second and third members received 75 and 50% of this amount, respectively. A subsequent 1-week adjustment plus 1-week fecal and urine collection in metabolism cages was used to estimate the apparent digestible and metabolizable nutrient content of the diet. A linear regression of feed intake with average daily body weight gain or loss provided the basis for estimating maintenance energy requirements at mean weekly ambient temperatures ranging from 1.1 to -9.5 C. The average estimated daily maintenance requirement for the 9-week period was 158 kcal of apparently digestible energy and 131 kcal of metabolizable energy per kg $BW^{0.75}$.

USDA Forest Service. WHITE-TAILED DEER IN THE MIDWEST / A SYMPOSIUM, PRESENTED AT THE 30TH MIDWEST FISH AND WILDLIFE CONFERENCE, COLUMBUS, OHIO, DECEMBER 9, 1968. *USDA Forest Serv. Res. Pap. NC-39.* 34 p., illus. 1970. *WR 140: 106*
The present status and future prospects on the nonyarding deer populations in the midwestern U.S. are discussed. Range appraisal, harvest regulation, and population control are included.

Vogl, Richard J., and Alan M. Beck. RESPONSE OF WHITE-TAILED DEER TO A WISCONSIN WILDFIRE. *Am. Midland Nat.* 84(1): 270-273, 2 figs. July 1970. *WR 140: 106*
[Calif. State Coll., Los Angeles.] Abstract: An average of 2.4 times more white-tailed deer tracks were found on roads through a severe wildfire area eight years after burning than on comparable roads in the unburned control. The results document the prolonged effects of fire, and the necessity of considering long-range effects in evaluating ecological factors.

Whitney, Elinor, Albert P. Roz, George A. Rayner, and Rudolf Deibel. SEROLOGIC SURVEY FOR ARBOVIRUS ACTIVITY IN DEER SERA FROM NINE COUNTIES IN NEW YORK STATE. *Bull. Wildl. Disease Assoc.* 5(4): 392-397. Oct. 1969. *WR 140: 106*
[Albany Med. Coll. Union Univ., Albany, N.Y.] Abstract: Sera from 352 deer from nine New York State counties were tested for neutralizing and hemagglutination-inhibiting antibodies to six arboviruses representing four groups. Antibody titers to California encephalitis and Cache Valley viruses were detected in varying frequency in the 9 counties with foci for the Bunyamwera group in Seneca, Dutchess, and Erie counties. Neutralizing antibodies to western equine encephalomyelitis were noted in sera collected in 1959-61 from Albany and Seneca counties while a focus of group B arbovirus activity, most probably due to Powassan virus, was found in Shelter Island, Suffolk County. Our experience indicates the usefulness of deer as natural indicators of activity of certain arboviruses.

Wood, John E., Thomas S. Bickle, Wainright Evans, James C. Germany, and Volney W. Howard, Jr. THE FORT STANTON MULE DEER HERD (SOME ECOLOGICAL AND LIFE HISTORY CHARACTERISTICS WITH SPECIAL EMPHASIS ON THE USE OF WATER). *N. Mex. State Univ. Agr. Expt. Sta. Bull.* 567. i + 32 p., 8 figs. Sept. 1970. *WR 140: 106*

MAMMALS--MARINE

Anas, Raymond E. ACCURACY IN ASSIGNING AGES TO FUR SEALS. *J. Wildl. Mgmt.* 34(4): 844-852, 2 figs. Oct. 1970. *WR 140: 107*
[Marine Mammal Lab., Seattle, Wash.] Abstract: Ages of seals *(Callorhinus ursinus)* killed annually for their furs on the Pribilof Islands, Alaska, are determined from samples of whole and sectioned upper canine teeth. Sectioned teeth, however, were used only in 1968 and only for females 7 years old and older. Tests of the percentage errors showed significant differences *(P<0.01)* in mean squares for the ages-types of tooth preparation interaction and readers for females in ages 3 to 7, the readers and ages for females in ages 7 to 11, and the readers-types of tooth preparation-ages interaction mean square for males in ages 2 to 5 years. Whole teeth were superior to sectioned teeth for assigning ages to females in ages 3 to 7. Whole teeth and sectioned teeth were about equally useful for assigning ages to males in ages 2 to 5. The four readers had common pooled errors for whole teeth of 3- to 7-year-old females (13.4%). Three of the four readers had common pooled errors for sectioned teeth of 7- to 11-year-old females (48.6%). One reader differed significantly from the other readers for sectioned teeth, but the remaining reader errors were common for whole and sectioned teeth of 2- to 5-year-old males (8.0%). Adjusted errors of -3.44, +1.37, and +3.35% (overall error of 2.54%) were computed for females killed since 1956 in ages 3, 4, and 5, respectively, and adjusted errors of +15.98, -1.60, +0.28, and +2.21% (overall error of 1.93%) were computed for males killed since 1956 in ages 2, 3, 4, and 5, respectively, on the Pribilof Islands. The estimated error for age 6 females killed since 1956 was +6.52%. The kills of females 7 years old and older were not adjusted.

Best, P. B. THE SPERM WHALE *(PHYSETER CATODON)* OFF THE WEST COAST OF SOUTH AFRICA. 4. DISTRIBUTION AND MOVEMENTS. *Div. Sea Fisheries Invest. Rept.* (Cape Town) 78: 1-12. 1969. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 107*

Best, P. B. THE SPERM WHALE *(PHYSETER CATODON)* OFF THE WEST COAST OF SOUTH AFRICA. 5. AGE, GROWTH, AND MORTALITY. *Div. Sea Fisheries Invest. Rept.* (Cape Town) 79: 1-27. 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 107*

Burns, John J. REMARKS ON THE DISTRIBUTION AND NATURAL HISTORY OF PAGOPHILIC PINNIPEDS IN THE BERING AND CHUKCHI SEAS. *J. Mammal.* 51(3): 445-454, 1 fig. Aug. 1970. *WR 140: 107*
[Alaska Dept. Fish & Game, Fairbanks.] Abstract: Five species of pagophilic (ice-loving) pinnipeds live in the Bering and Chukchi seas: *Odobenus rosmarus, Phoca (Pusa) hispida, Phoca (Histriophoca) fasciata,* an ice-breeding population of *Phoca (Phoca) vitulina,* and *Erignathus barbatus.* Breeding adults of these species are mostly separated from each other during late winter and early spring, when, throughout the pupping and subsequent mating periods, *P. vitulina* and *P. fasciata* occupy the edge-zone of the seasonal pack ice, *E. barbatus* and *O. rosmarus* are mainly farther north within the heavier pack ice, and *P. hispida* occupies areas of extensive land-fast ice. This paper discusses differences in body structure, ecological adaptation, and behavior in relation to distribution of the five species.

Caldwell, David K., Melba C. Caldwell, and Cecil M. Walker, Jr. MASS AND INDIVIDUAL STRANDINGS OF FALSE KILLER WHALES, *PSEUDORCA CRASSIDENS*, IN FLORIDA. *J. Mammal.* 51(3): 634-636, 1 fig. Aug. 1970. *WR 140: 107*
[Univ. Fla., Gainesville.]

Cameron, Austin W. SEASONAL MOVEMENTS AND DIURNAL ACTIVITY RHYTHMS OF THE GREY SEAL *(HALICHOERUS GRYPUS). J. Zool.* 161(1): 15-23, illus. 1970. [From Biol. Abstr. 51(21), 1970.] *WR 140: 107*
[McGill Univ., Montreal, Quebec, Canada.]

Cecil, J. T., and R. F. Nigrelli. CELL CULTURES FROM MARINE MAMMALS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 494-495, 4 figs. Oct. 1970. *WR 140: 107*
[Osborn Lab. Marine Sci., Brooklyn, New York, N.Y.]

Chugunkov, D. I. [KAMCHATKA'S PINNIPEDIA.] *Priroda* (Moscow) 6: 12-17. 1970. [From J. Mammal. 51(4, suppl.), 1970. In Russian.] *WR 140: 108*

Dailey, Murray D. THE TRANSMISSION OF *PARAFILAROIDES DECORUS* (NEMATODA: METASTRONGYLOIDEA) IN THE CALIFORNIA SEA LION *(ZALOPHUS CALIFORNIANUS). Proc. Helminthol. Soc. Washington* 37(2): 215-222. July 1970. [From J. Mammal. 51(4, suppl.), 1970.] *WR 140: 108*

Devine, Eleanore, and Martha Clark, editors. THE DOLPHIN SMILE / TWENTY-NINE CENTURIES OF DOLPHIN LORE. *Macmillan Co.* (New York). xxii + 370 p., illus., 5.75 x 8.50 in. 1967. Price $7.95. *WR 140: 108*
"The first anthology of literary and scientific observations on the dolphin." A comprehensive collection of nearly one hundred selections arranged chronologically.

Erdman, Donald S. MARINE MAMMALS FROM PUERTO RICO TO ANTIGUA. *J. Mammal.* 51(3): 636-639. Aug. 1970. *WR 140: 108*
[Dept. Agr., San Juan, Puerto Rico.] Annotated list of 11 spp.

Evans, W. E., and Earl S. Herald. UNDERWATER CALLS OF A CAPTIVE AMAZON MANATEE, *TRICHECHUS INUNGUIS. J. Mammal.* 51(4): 820-823, 3 figs. Nov. 1970. *WR 140: 108*
[Naval Undersea Res. & Development Center, San Diego, Calif.]

Hancock, David. CALIFORNIA SEA LION AS A REGULAR WINTER VISITANT OFF THE BRITISH COLUMBIA COAST. *J. Mammal.* 51(3): 614. Aug. 1970. *WR 140: 108*
[Wildl. Conserv. Centre, Saanichton, British Columbia, Canada.] *"Zalophus californianus."*

Hotta, Hideyuki, Hiroshi Mako, Keisuke Okada, and Umeyoshi Yamada. [ON THE STOMACH CONTENTS OF DOLPHINS AND PORPOISES OF KYUSHU.] *Bull. Seikai Regional Fisheries Res. Lab.* (Nagasaki) 37: 71-85. Nov. 1969. [From J. Mammal. 51(4, suppl.), 1970. In Japanese with English summ.] *WR 140: 108*

Hubbard, Richard C. CHEMOTHERAPY IN CAPTIVE MARINE MAMMALS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 218-230, 1 fig. July 1969. *WR 140: 108*
[Stanford Res. Inst., Menlo Park, Calif.] Drug usage in seals and toothed whales is discussed, including anesthetics, tranquilizers, antihistamines, hormones, vitamins, and antimicrobial agents.

Jonsgard, A., and P. B. Lyshoel. A CONTRIBUTION TO THE KNOWLEDGE OF THE BIOLOGY OF THE KILLER WHALE *ORCINUS ORCA* (L.). *Nytt Mag. Zool.* (Oslo) 18(1): 41-48, illus. 1970. [From Biol. Abstr. 51(20), 1970.] *WR 140: 108*
[Univ. Oslo, Oslo, Norway.]

Norris, Kenneth S., and Karen W. Pryor. A TAGGING METHOD FOR SMALL CETACEANS. *J. Mammal.* 51(3): 609-610, 2 figs. Aug. 1970. *WR 140: 108*
[Makapuu Oceanic Center, Waimanalo, Oahu, Hawaii.] "For *Steno bredanensis* and *Stenella attenuata.*"

Orr, Robert T., Jacqueline Schonewald, and Karl W. Kenyon. THE CALIFORNIA SEA LION *(ZALOPHUS CALIFORNIANUS CALIFORNIANUS)*: SKULL GROWTH AND A COMPARISON OF TWO POPULATIONS. *Proc. Calif. Acad. Sci.* 37(11): 381-394, illus. 1970. [From Biol. Abstr. 51(20), 1970.] *WR 140: 108*
[Calif. Acad. Sci., San Francisco.]

Pershin, S. V., A. S. Sokolov, and A. G. Tomilin. [ELASTICITY OF DOLPHIN FINS CONTROLLED BY SPECIAL VASCULAR ORGANS.] *Doklady Akad. Nauk SSSR* 190(3): 709-712, illus. 1970. [From Biol. Abstr. 51(21), 1970. In Russian.] *WR 140: 108*
[Acad. Sci. USSR, Leningrad, USSR.]

Pier, A. C., A. K. Takayama, and A. Y. Miyahara. CETACEAN NOCARDIOSIS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(2): 112-118, 5 figs. Apr. 1970. *WR 140: 109*
[Natl. Animal Disease Lab., Ames, Iowa.]

Pilleri, G. ON THE BEHAVIOR OF THE AMAZON DOLPHIN, *INIA GEOFFRENSIS* IN BENI (BOLIVIA). *Rev. Suisse Zool.* 76(1): 57-91, illus. 1969. [From Biol. Abstr. 51 (21), 1970.] *WR 140: 109*
[Brain Anat. Inst., Waldau-Bern, Switzerland.]

Robinette, H. Randall, and Howard J. Stains. COMPARATIVE STUDY OF THE CALCANEA OF THE PINNIPEDIA. *J. Mammal.* 51(3): 527-541, 4 figs. Aug. 1970. *WR 140: 109*
[Southern Ill. Univ., Carbondale.]

Roe, H. S. J. THE FOOD AND FEEDING HABITS OF THE SPERM WHALES *(PHYSETER CATODON* L.*)* TAKEN OFF THE WEST COAST OF ICELAND. *J. Cons. Cons. Int. Perma. Explor. Mer* 33(1): 93-102. 1969. [From Biol. Abstr. 51(21), 1970.] *WR 140: 109*
[Nat. Inst. Oceanogr., Wormley, Godalming, England.]

Ronald, K., E. Johnson, M. Foster, and D. Vander Pol. THE HARP SEAL, *PAGOPHILUS GROENLANDICUS* (ERXLEBEN, 1777). I. METHODS OF HANDLING, MOLT, AND DISEASES IN CAPTIVITY. *Canadian J. Zool.* 48(5): 1035-1040 + 6 figs. on 2 pls. Sept. 1970. *WR 140: 109*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: Methods of capturing harp seals and maintaining them in captivity are described, and the molt and symptoms of various diseased animals are discussed together with postmortem findings.

Scheffer, Victor B. THE YEAR OF THE SEAL. *Charles Scribner's Sons* (New York). xi + 205 p., 6.75 x 9 in. 1970. Price $7.95. *WR 140: 109*
"A year in the life of a seal is an ordinary year; repetitive, ritualistic, undramatic. In summer the female gives birth on land, copulates, nurses her pup; in the fall she goes to sea for many months, returning to land in summer, again to give birth and copulate." In describing the biology of the Alaskan fur seal, Dr. Scheffer has chosen to construct a hypothetical year in the life of a female seal. Although written as fiction, the book is based on his years of experience with marine mammals, and includes descriptions of the pelagic and land studies being carried out by the U.S. Fish and Wildlife Service on seals. From the first spring arrivals of the harem bulls on St. Paul, through the pupping season in July and subsequent mating, the six- to nine-month pelagic migration of the entire population, and their return to the hauling grounds the following year, the life of the fur seal is described with sympathy and accuracy.

Schusterman, Ronald J., and Richard F. Balliet. VISUAL ACUITY OF THE HARBOUR SEAL AND THE STELLER SEA LION UNDER WATER. *Nature* 226(5245): 563-564, 1 fig. 9 May 1970. *WR 140: 109*
[Stanford Res. Inst., Menlo Park, Calif.] Earlier experiments on the visual acuity of pinnipeds under water were unsuccessful in keeping animals at a minimum distance from the stimuli, and in using stimuli which measured visual resolving power but not intensity discriminations. Acuity targets were produced from Ronchi rulings with black and white stripes of equal width. The standard grating consisted of 300 lines per inch. *Eumetopias* performed slightly better than chance *(P*<0.01*)* with targets which subtended a visual angle of 6.4' of arc. A significantly better-than-chance performance by *Phoca* was not achieved until tested with broader stripes subtending a visual angle of 7.5'.

Schusterman, Ronald J., and Richard F. Balliet. CONDITIONED VOCALIZATIONS AS A TECHNIQUE FOR DETERMINING VISUAL ACUITY THRESHOLDS IN SEA LIONS. *Science* 169(3944): 498-501, 2 figs. 31 July 1970. *WR 140: 109*
[Stanford Res. Inst., Menlo Park, Calif.] Abstract: Aerial visual acuity and underwater visual acuity were measured in two sea lions *(Zalophus californianus)* by training them to emit click bursts if they saw a striped target or to

remain silent if they saw a gray target. The closest grating spacings that could be resolved both in air and under water subtended a visual angle of 5.5 minutes of arc at a distance of 5.5 meters.

Simpson, John G., William G. Gilmartin, and Sam H. Ridgway. BLOOD VOLUME AND OTHER HEMATOLOGIC VALUES IN YOUNG ELEPHANT SEALS *(MIROUNGA ANGUSTIROSTRIS)*. *Am. J. Vet. Res.* 31(8): 1449-1452, 1 fig. Aug. 1970. *WR 140: 110*
[Naval Undersea Res. & Development Center, San Diego, Calif.]

Stirling, Ian. OBSERVATIONS ON THE BEHAVIOR OF THE NEW ZEALAND FUR SEAL *(ARCTOCEPHALUS FORSTERI)*. *J. Mammal.* 51(4): 766-778, 4 figs. Nov. 1970. *WR 140: 110*
[Canadian Wildl. Serv., Highway 31, Ottawa, Ontario, Canada.]

Thomas, Barry. NOTES ON THE BEHAVIOR OF THE KILLER WHALE *ORCINUS ORCA* (LINNAEUS). *Murrelet* 51(1): 11. Jan.-Apr. 1970. *WR 140: 110*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] A "scratching exercise" was observed.

Tickell, W. L. N. THE EXPLOITATION AND STATUS OF THE COMMON SEAL *(PHOCA VITULINA)* IN SHETLAND. *Biol. Conserv.* 2(3): 179-184, illus. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 110*
[Makerere Univ. Coll., Kampala, Uganda.]

Wilson, T. M., N. F. Cheville, and L. Karstad. SEAL POX. *Bull. Wildl. Disease Assoc.* 5(4): 412-418, 6 figs. Oct. 1969. *WR 140: 110*
[Univ. Guelph, Guelph, Ontario, Canada.] "The light and electron microscopic results and epizootiological nature of this disease indicate it to be a skin disease of poxvirus origin."

Wilson, T. M., and P. R. Sweeney. MORPHOLOGICAL STUDIES OF SEAL POXVIRUS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(2): 94-97, 3 figs. Apr. 1970. *WR 140: 110*
[Univ. Guelph, Guelph, Ontario, Canada.]

Wilson, T. M., and P. H. Stockdale. THE HARP SEAL, *PAGOPHILUS GROENLANDICUS* (ERXLEBEN, 1777) XI. *CONTRACAECUM* SP. INFESTATION IN A HARP SEAL. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 152-154, 2 figs. July 1970. *WR 140: 110*
[Univ. Guelph, Guelph, Ontario, Canada.] A case history.

Wo/k, Krzysztof. [MIGRATORY CHARACTER OF THE BALTIC POPULATION OF THE PORPOISE, *PHOCOENA PHOCOENA* (L.).] *Przeglad Zool.* 13(4): 349-351. 1969. [From J. Mammal. 51(4, suppl.), 1970. In Polish with English summ.] *WR 140: 110*

Zasosov, A. V. [MODERN METHODS OF ASSESSING THE NUMBER OF WHALES.] *Proc. All-Union Res. Inst. Marine Fisheries Oceanogr.* (Moscow) 67: 201-218. 1969. [From J. Mammal. 51(4, suppl.), 1970. In Russian.] *WR 140: 110*

MAMMALS--OTHER GROUPS

Augee, M. L., E. H. M. Ealey, and H. Spencer. BIOTELEMETRIC STUDIES OF TEMPERATURE REGULATION AND TORPOR IN THE ECHIDNA, *TACHYGLOSSUS ACULEATUS*. *J. Mammal.* 51(3): 561-570, 5 figs. Aug. 1970. *WR 140: 110*
[Monash Univ., Clayton, Victoria, Australia.]

Barbu, Profira. LA NOURRITURE DU NYCTÉREUTE *(NYCTEREUTES PROCYONOIDES* GRAY) DU DELTA DU DANUBE. [FOOD OF THE *NYCTEREUTES-PROCYONOIDES* IN THE DANUBE DELTA.] *Rev. Roum. Biol. Ser. Zool.* 13(5): 301-306. 1968. [From Biol. Abstr. 51(17), 1970. In French with English summ.] *WR 140: 110*
[Univ. Bucharest, Bucharest, Romania.]

Berger, Michael E. THE TRAPPING AND SUBSEQUENT BEHAVIOR OF BABOONS IN KENYA. *J. Wildl. Mgmt.* 34(4): 817-820. Oct. 1970. *WR 140: 111*
[Texas A&M Univ., College Station.]

Fitch, Henry S., and Hampton W. Shirer. A RADIOTELEMETRIC STUDY OF SPATIAL RELATIONSHIPS IN THE OPOSSUM. *Am. Midland Nat.* 84(1): 170-186, 6 figs. July 1970. *WR 140: 111*
[Univ. Kans., Lawrence.] Abstract: Habits of 27 opossums were studied by attaching small radio transmitters and trailing them on the University of Kansas Natural History Reservation in 1966 and parts of 1965 and 1967. Activity is normally nocturnal and during the day each animal stays in a den. Most of the 88 dens located were in underground cavities of hilltop limestone outcrops; others were among tree roots in cutbanks of gullies; relatively few were in miscellaneous situations such as hollow trees, old buildings, or burrows away from rock outcrops. The average sojourn at a den is 2.2 days and each opossum uses many different dens but returns frequently to each of several favorite dens. An adult opossum forages from its den over an area with mean radius of 620 m but tends to stay much closer to its den. Extent of movement and frequency of shift were not closely correlated with season or temperature. A newly independent, young opossum tends to stay within a relatively small area at first, and to extend its range by gradual stages. Of nine young opossums that were trailed, three were preyed upon by the horned owl.

McManus, John Joseph. BEHAVIOR OF THE OPOSSUM, *DIDELPHIS MARSUPIALIS. Ph.D. thesis, Cornell Univ.* 130 p. 1969. [From Dissertation Abstr. Intern. 30(2B), 1969.] *WR 140: 111*

McManus, John J. BEHAVIOR OF CAPTIVE OPOSSUMS, *DIDELPHIS MARSUPIALIS VIRGINIANA. Am. Midland Nat.* 84(1): 144-169, 5 figs. July 1970. *WR 140: 111*
[Fairleigh Dickinson Univ., Madison, N.J.] Abstract: The individual and social behavior of 73 captive opossums, *Didelphis marsupialis virginiana*, was studied. The patterns of behavior seen in *Didelphis* appear generalized, correlating with the opossum's primitive morphology and taxonomic status. Diverse locomotor patterns, arboreal modifications, and highly unselective food habits explain in part the diversity of habitats frequented by *Didelphis* in North America. A well developed attitude of passive defense is seen in interspecific encounters and the adaptive significance of such behavior is considered. Social behavior is poorly developed and, with the exception of mating, most intraspecific encounters between adults are agonistic in nature. Although marsupials are usually not successful in competition with placentals, the opossum is an obvious exception. Presumably, its generalized behavior has allowed *Didelphis* to exploit a variety of food sources and habitat types. This, together with a high reproductive potential, may account for the evolutionary persistence of the species, and its current ecological success.

Potkay, Stephen. DISEASES OF THE OPOSSUM *(DIDELPHIS MARSUPIALIS)*: A REVIEW. *Lab. Animal Care* 20(3): 502-511. June 1970. *WR 140: 111*
[NIH, Bethesda, Md.] Summary: The opossum *(Didelphis marsupialis)* is being utilized as a research animal with increasing frequency. The naturally occurring and experimentally induced diseases that affect this species have been reviewed. They include rabies, pseudorabies, B virus infection, tuberculosis, tularemia, leptospirosis, relapsing fever, streptococcal infections, and endemic murine typhus. The opossum is the host for numerous parasites. Helminths are most commonly encountered, and a number of ectoparasites are associated with the opossum. *D. marsupialis* serves as a reservoir for Chagas' disease and is also susceptible to other protozoan infections. Histoplasmosis occurs in opossums, and dermatophytes have been isolated from this species. Diseases such as rickets, nephritis, pneumonia, hepatitis, and various neoplasms also afflict the opossum. All of the reported diseases should be considered important, particularly in opossums that are obtained directly from the wild for use in research.

BIRDS--GENERAL

Anderson, Bertin Walter. HYBRIDIZATION IN FLICKERS, GROSBEAKS AND ORIOLES IN SOUTH DAKOTA. *Ph.D. thesis, Univ. S. Dak.* 149 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 112*
Flickers *(Colaptes)*, orioles *(Icterus)* and grosbeaks *(Pheucticus)* were collected in order to document the extent of hybridization between eastern and western forms of each in South Dakota, to define major avenues of gene flow across the state, and to assess the role man has played in increasing or decreasing genetic exchange between these birds.

Crawford, Richard D. MOURNING DOVE AND BLACKBIRD PRODUCTION IN A MISSOURI PINE PLANTING. *Iowa Bird Life* 40(3): 65-67. Sept. 1970. *WR 140: 112*
[Northeast Mo. State Coll., Kirksville.] In the two-acre plot, 84 mourning doves, 92 grackles, and 21 red-winged blackbirds fledged in two years.

Curry-Lindahl, Kai. BIRD CONSERVATION IN EUROPE. *Bird Study* 17(2): 61-80. June 1970. *WR 140: 112*
[UNESCO House, P.O. Box 30592, Nairobi, Kenya.] Several international organizations have been formed to study and help protect the bird life of the world. Some of these are mentioned and their activities are described. The accomplishments of individual nations, such as protective legislation, creation of preserves, and organization of conservation efforts, are mentioned.

Cvitanić, A., and P. Novak. [A CONTRIBUTION TO THE KNOWLEDGE OF THE FOOD OF BIRDS IN MIDDLE DALMATIA.] *Larus* 20: 80-100. 1968. [From Auk 87(3), 1970. In Serbo-Croatian with German summ.] *WR 140: 112*

Elliott, Hugh F. I. OUTLOOK FOR BIRD CONSERVATION. *Bird Study* 17(2): 81-94. June 1970. *WR 140: 112*
[173 Woodstock Road, Oxford, England.] Pollution, habitat destruction and human exploitation are negative factors in maintaining an equilibrium in bird populations, but adequate supervision and proper training can alleviate some detrimental practices.

Ghigi, Alessandro. SUPÉRIORITÉ GÉNÉTIQUE DES MÂLES ET SUPÉRIORITÉ ÉCHOLOGIQUE DES FEMELLES DANS QUELQUES ESPÈCES D'OISEAUX. [GENETIC SUPERIORITY OF MALES AND ECOLOGIC SUPERIORITY OF FEMALES AMONG SOME BIRD SPECIES.] *VII Intern. Congr. Game Biol.* p. 47-50. 1967. In French with Russian summ. *WR 140: 112*

Hopkins, Milton, Jr. IDENTIFIED FOOD ITEMS IN THE DIETS OF NESTLING LITTLE BLUE HERON, CATTLE EGRET, AND ANHINGA. *Oriole* 35(2-3): 30-32. June-Sept. 1970. *WR 140: 112*
[RFD 5, Box 113, Fitzgerald, Ga.]

Jablonski, B. [THE PROBLEM OF LIGHT PENETRATION TO BIRDS' NESTS, USING SPECIES OF THE GENUS *PHYLLOSCOPUS* BOIE AS EXAMPLES.] *Ekologia Polska--Ser. B* 15: 45-53. 1969. [From Auk 87(4), 1970. In Polish with English summ.] *WR 140: 112*

Macke, Til. NOTIZEN UEBER DIE MOEGLICHKEIT DER ENDOZOISCHEN VERBREITUNG VON INSEKTEN DURCH VOEGEL. [OBSERVATIONS ABOUT THE POSSIBILITY OF THE ENDOZOIC DISSEMINATION OF INSECTS BY BIRDS.] *Bonner Zool. Beitr.* 20(1-3): 279-281. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 112*
[Hochstadenring 48, Bonn, Germany.]

Ricklefs, Robert E. CLUTCH SIZE IN BIRDS: OUTCOME OF OPPOSING PREDATOR AND PREY ADAPTATIONS. *Science* 168(3931): 599-600. 1 May 1970. *WR 140: 112*
[Univ. Pa., Philadelphia.] Abstract: A model is proposed to explain clutch size in birds as the outcome of the interaction between predatory adaptations of birds to increase their feeding efficiency and adaptations of their food resources to avoid predation. Variations in clutch size are consistent with the model. A modification that incorporates the seasonality of food resources is also discussed.

Rucner, Renata, editor. LARUS / ANNUAL OF THE DEPARTMENT OF ORNITHOLOGY, INSTITUTE OF BIOLOGY, ZAGREB UNIVERSITY / XX / 1966. *Translated and published for the Smithsonian Institution and the National Science Foundation, Washington, D.C., by the NOLIT Publishing House* (Belgrade, Yugoslavia). TT 69-51014. 104 p. 1970. Serbo-Croatian original from Larus 20, 1966. [Translation available from U.S. Dept. Commerce, Clearinghouse for Federal Scientific and Technical Information, Springfield, Va.] *WR 140: 113*

Includes: Bird banding in 1965, 17th report; On the Yugoslav endemic subspecies *Apus pallidus illyricus* (Tschusi); Incidence of the waxwing, *Bombycilla garrulus*, in Yugoslavia in winter 1965/66; The avifauna of Ludaško Jezero Lake; A contribution to the study of avian nutrition in Middle Dalmatia; Contribution to the knowledge of the avifauna of the Slavonski Brod environs; and several short notes.

Shrubb, M. BIRDS AND FARMING TODAY. *Bird Study* 17(2): 123-144. June 1970. *WR 140: 113*

[Fairfields, Sidlesham, Sussex, England.] Major agricultural changes are the increase in cereals and decline in grassland, the replacement of labor by machinery, the use of chemicals, and a redistribution of stock. Birds are affected through reduction of nest-sites and territory, decreasing food supplies, and declining breeding success. Loss of specialized habitat and the use of chemicals appear most detrimental.--From summ.

Stewart, Paul A. INTRODUCTION OF FOREIGN EGGS INTO NESTS OF STARLINGS AND HOUSE SPARROWS. *Bird-Banding* 41(3): 241. July 1970. *WR 140: 113*

[USDA, Entomol. Res. Div., Oxford, N.C.] Each of four attempts to induce starlings or house sparrows to hatch the eggs and rear the young of another species was unsuccessful.

Wallace, D. I. M. THE FIRST TEN YEARS OF THE RARITIES COMMITTEE. *British Birds* 63(3): 113-129. 1970. *WR 140: 113*

[c/o Nigerian Breweries, Box 545, Lagos, Nigeria.] The total number of rarities reported, number of observers, percentage of acceptance, geography of accepted and rejected records, and the degree of difficulty in identifying rare migrants in Britain are given.

Williamson, K. THE IMPORTANCE OF MANAGING SCRUB AS A BREEDING HABITAT FOR BIRDS. *1968 Handbook, Soc. Prom. Nat. Reserves.* p. 1-7. 1968. [From Ibis 112(3), 1970.] *WR 140: 113*

Williamson, Kenneth. BIRDS AND MODERN FORESTRY. *Bird Study* 17(2): 167-176, 1 fig. July 1970. *WR 140: 113*

[British Trust Ornithol., Tring, Hertfordshire, England.] The density and diversity of bird-life are high where young conifer plantations are surrounded by a "landscape fringe" of mature deciduous trees and where "island refuges" of deciduous trees and scrub are allowed to remain when the ground is clear-felled and replanted with conifers.--From summ.

Won, P. O., H. C. Woo, K. W. Ham, and M. Z. Chun. [CHICK FOOD ANALYSIS OF SOME KOREAN BIRDS (III).] *Misc. Repts. Yamashina's Inst. Ornithol.* 5: 363-369. 1968. [From Auk 87(3), 1970. In Japanese with English summ.] *WR 140: 113*

BIRDS--TECHNIQUES

Bleitz, Don. MIST NETS AND THEIR USE. *Inland Bird Banding News* 42(2): 43-56, 18 figs. Mar.-Apr. 1970. *WR 140: 113*

[5334 Hollywood Blvd., Hollywood, Calif.] The sizes and weights of mist nets, their care and handling, and proper procedure in locating and erecting the nets are discussed in detail.--Courtesy/ Paul A. Stewart.

Bruderer, B., and J. Joss. METHODEN UND PROBLEME DER BESTIMMUNG VON RADAR-QUERSCHNITTEN FREI FLIEGENDER VÖGEL. [METHODS AND PROBLEMS OF THE DETERMINATION BY RADAR CROSS-SECTION OF FLYING BIRDS.] *Rev. Suisse Zool.* 76: 1106-1118. 1969. [From Ibis 112(4), 1970. In German.] *WR 140: 114*

Bubenik, A. B., I. Gajić, V. Jović, and R. Tachezy. TRAITEMENT DE PERDRIX ET DE FAISANS PAR DES TRANQUILLISANTS DU GROUPE DES BENZODIAZÉPINES. [TREATMENT OF PARTRIDGES AND PHEASANTS WITH TRANQUILIZERS OF THE BENZODIAZEPHINE GROUP.] *VII Intern. Congr. Game Biol.* p. 261-265. 1967. In French with Russian summ. *WR 140: 114*

Diehl, Barbara. METODA OCENY KONSUMPCJI DLA PISKLAT DZIERZBY GASIORKA *(LANIUS COLLURIO* L.*).* [METHOD OF CALCULATING THE FOOD CONSUMPTION IN NESTLING RED-BACKED SHRIKES *(LANIUS COLLURIO* L.*).*] *Ekologia Polska--Ser. B* 14(3): 279-281, illus. 1968. [From Biol. Abstr. 51(19), 1970. In Polish with English summ.] *WR 140: 114*
[Inst. Ecol. PAN, Warsaw, Poland.]

Fredrickson, Leigh H. A NYLON BELT FOR HOLDING BIRDS. *Bird-Banding* 41(3): 242-243, 1 fig. July 1970. *WR 140: 114*
[Univ. Mo., Puxico.] The device prevents struggling during weighing procedures.--Courtesy/ Paul A. Stewart.

Gehring, Walter. ANALYSE DER RADARECHOS VON VOEGELN UND INSEKTEN. [ANALYSIS OF RADAR-ECHOES OF BIRDS AND INSECTS.] *Ornithol. Beob.* 64(5/6): 145-151, illus. 1967. [From Biol. Abstr. 51(17), 1970. In German with English summ.] *WR 140: 114*
[Univ. Zurich, Zurich, Switzerland.]

Gill, Douglas E., William J. L. Sladen, and Charles E. Huntington. A TECHNIQUE FOR CAPTURING PETRELS AND SHEARWATERS AT SEA. *Bird-Banding* 41(2): 111-113. Apr. 1970. *WR 140: 114*
[Univ. Mich., Ann Arbor.] The birds were baited to the side of the boat, then captured with a hand-thrown net threaded onto a hoop.--Courtesy/ Paul A. Stewart.

Hyytiä, Kalevi. LINTUHARRASTUSAKTIIVISUUS JA HAVAINTOMÄÄRÄT. [ORNITHOLOGICAL ACTIVITY AND THE NUMBER OF OBSERVATIONS.] *Ornis Fennica* 47(2): 83-86, 3 figs. 1970. In Finnish with English summ. *WR 140: 114*
[Kannaksenk. 20, Lahti, Finland.]

Kuroda, N. H. [A WINTER HILL BIRD CENSUS AT SOUTHWEST SKIRTS OF TOKYO: AN EXAMPLE OF CENSUS ANALYSIS.] *Misc. Repts. Yamashina's Inst. Ornithol.* 5: 337-350. 1968. [From Auk 87(3), 1970. In Japanese with English summ.] *WR 140: 114*

Lanyon, Wesley E., and Vernia H. Lanyon. A TECHNIQUE FOR REARING PASSERINE BIRDS FROM THE EGG. *Living Bird* 8: 81-93, 6 figs. 1969. *WR 140: 114*
[Am. Mus. Nat. Hist., New York, N.Y.] Detailed directions for incubating the eggs, brooding the young, and feeding the nestlings until they are ready to fledge. Great crested flycatchers, blue jays, house wrens, eastern meadowlarks, and house finches.--From summ.

Larsen, Kenneth H. A HOOP-NET TRAP FOR PASSERINE BIRDS. *Bird-Banding* 41(2): 92-96, 2 figs. Apr. 1970. *WR 140: 114*
[Bur. Sport Fisheries & Wildl., Cornelius, Oreg.] Summary: Construction details are presented for a hoop-net trap based on the concept of a lowered entrance. Main advantages of the walk-in trap are light weight, ease of erection and compactness for storage and transportation. It has been used primarily for capturing thousands of house finches *(Carpodacus mexicanus).*--Courtesy/ Paul A. Stewart.

Leberman, Robert C. PATTERN AND TIMING OF SKULL PNEUMATIZATION IN THE RUBY-CROWNED KINGLET. *Bird-Banding* 41(2): 121-124, 1 fig. Apr. 1970. *WR 140: 115*
[Powdermill Nature Preserve, Rector, Pa.] Skull ossification in *Regulus calendula* may follow one of two different patterns. Separation of first-year birds on the basis of a completely pneumatized skull is unsafe after September.--Courtesy/ Paul A. Stewart.

März, Robert. GEWÖLL- UND RUPFUNGSKUNDE. [PELLETS AND PLUCKED FEATHERS.] *Akademie-Verlag* (Berlin). xi + 287 p., illus. 1969. [From Biol. Abstr. 51 (20), 1970. In German.] *WR 140: 115*
"Rejected indigestible food remnants and their relation to ornithological identification and the study of the food habits of wild birds. Pellets and pluckings are illustrated for numerous bird species."

Moody, David T. A METHOD FOR OBTAINING FOOD SAMPLES FROM INSECTIVOROUS BIRDS. *Auk* 87(3): 579. July 1970. *WR 140: 115*
[Route 3, Box 111, Moses Lake, Wash.] A 10-cc disposable plastic syringe is filled with warm saline solution, and a flexible plastic tube, 16 cm long and 4 mm in diameter, is coated with vaseline, and inserted gently into the esophagus until the tip rests against the stomach. The bird is held with a receptacle under the cloaca and its head downward to avoid filling the oral cavity with water and drowning it.--Courtesy/ Paul A. Stewart.

Mulhern, Bernard M., and W. L. Reichel. THE EFFECT OF PUTREFACTION OF EGGS UPON RESIDUE ANALYSIS OF DDT AND METABOLITES. *Bull. Environmental Contamination & Toxicol.* 5(3): 222-225. May-June 1970. *WR 140: 115*
[Patuxent Wildl. Res. Center, Laurel, Md.]

Myrberget, Svein. METODER FOR FANGST AV SJOFULGER FOR MERKING. [METHOD FOR CATCHING SEA-BIRDS FOR BANDING.] *Sterna* 8(3): 105-109, illus. 1968. [From Biol. Abstr. 51(24), 1970. In Norwegian with English summ.] *WR 140: 115*

Nelson, Harvey K., A. T. Klett, and W. G. Burge. MONITORING MIGRATORY BIRD HABITAT BY REMOTE SENSING METHODS. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 73-84, 3 figs. 1970. *WR 140: 115*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.]

Norris, J. D., and R. N. H. Whitehouse. DECOY-CROP TRAPPING OF HOUSE SPARROWS. *Plant Pathol.* 19(1): 28-31. 1970. [From Biol. Abstr. 51(18), 1970.] *WR 140: 115*
[Min. Agr. Fish. & Food, Cambridge, England.]

Oelke, H., and H. Wolpers. MÖGLICHKEITEN UND FEHLERQUELLEN DER BESTIMMUNG DER FLUGHÖHEN VON ZUGVÖGELN UNTER ZUHILFENAHME DES FERNGLASES. [FEASIBILITY AND SOURCES OF ERROR IN THE DETERMINATION OF THE ALTITUDE OF BIRDS PASSING ACROSS THE FIELD OF VISION OF BINOCULARS.] *Vogelwarte* 24: 201-206. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 115*

Ralph, C. John, and Fred C. Sibley. A NEW METHOD OF CAPTURING NOCTURNAL ALCIDS. *Bird-Banding* 41(2): 124-127, 1 fig. Apr. 1970. *WR 140: 115*
[Point Reyes Bird Observatory, Bolinas, Calif.] A fish net 60 ft. x 20 ft. was erected across flight lines with wooden tripods. From 4-8% of the *Ptychoramphus aleuticus* leaving the island in the path of the net were caught.--Courtesy/ Paul A. Stewart.

Samuel, David E. BANDING, PAINT-MARKING AND SUBSEQUENT MOVEMENTS OF BARN AND CLIFF SWALLOWS. *Bird-Banding* 41(2): 97-103, 2 figs. Apr. 1970. *WR 140: 115*
[W. Va. Univ., Morgantown.] The flight feathers of barn swallows *(Hirundo rustica)* and cliff swallows *(Petrochelidon pyrrhonota)* were marked with airplane dope, apparently without impairment of flight capability.--Courtesy/ Paul A. Stewart.

BIRDS--TECHNIQUES--Continued

Slagsvold, Tore. LITT OM TAKSERINGSHASTIGHETENS INNVIRKNING PA OPPDAGELSES-SJANSEN VED FUGLETAKSERING. [THE EFFECT OF SURVEY SPEED ON THE DISCOVERY CHANCE IN BIRD SURVEYS.] *Fauna* 22(3): 195-200, illus. 1969. [From Biol. Abstr. 51(19), 1970. In Norwegian with English summ.] *WR 140: 116*
[Elvefaret 24, Oslo, Norway.]

Smith, Leonard. TRAPPING WOODPECKERS. *Inland Bird Banding News* 42(2): 68. Mar.-Apr. 1970. *WR 140: 116*
[Univ. S. Dak., Vermillion.] A crudely-constructed drop-trap was highly successful in catching woodpeckers and nuthatches.--Courtesy/ Paul A. Stewart.

BIRDS--MORPHOLOGY & PHYSIOLOGY

Appert, Otto. DIE RACHENZEICHNUNG BEIM NESTLING DES BRAUNKOPF-SEIDENKUCKUCKS *COUA RUFICEPS OLIVACEICEPS* (SHARPE) VON MADAGASKAR. [THE DESIGN IN THE CAVITY OF THE MOUTH OF NESTLINGS OF *COUA RUFICEPS OLIVACEICEPS* (SHARPE) FROM MADAGASCAR.] *Ornithol. Beob.* 64(2/3): 52-56. 1967. [From Biol. Abstr. 51(18), 1970. In German with French summ.] *WR 140: 116*
[Seminar, Werthenstein, Switzerland.]

Baxter, R. M., and Emil K. Urban. ON THE NATURE AND ORIGIN OF THE FEATHER COLOURATION IN THE GREAT WHITE PELICAN *PELECANUS ONOCROTALUS ROSEUS* IN ETHIOPIA. *Ibis* 112(3): 336-339. July 1970. *WR 140: 116*
[P.O. Box 1176, Addis Ababa, Ethiopia.] Summary: The yellow or orange-brown colour on the breast feathers and to a lesser extent on other feathers of the great white pelican in a breeding colony on an island in Lake Shala, Ethiopia, is due to the presence of ferric oxide. The feathers most probably become stained when the birds are in the water, and the source of the ferric oxide may be iron-rich silt carried into the lake by the Gidu River.

Boswall, Jeffery. AGE OF ACQUIRING ADULT PLUMAGE IN *GYPAETUS BARBATUS*. *Bull. British Ornithol. Club* 90(5): 120. Oct. 1970. *WR 140: 116*

Britton, P. L. SOME NON-PASSERINE BIRD WEIGHTS FROM EAST AFRICA. *Bull. British Ornithol. Club* 90(5): 142-144. Oct. 1970. *WR 140: 116*
Weights of approximately 150 spp.

Clench, Mary Heimerdinger. VARIABILITY IN BODY PTERYLOSIS, WITH SPECIAL REFERENCE TO THE GENUS *PASSER*. *Auk* 87(4): 650-691, 4 figs. Oct. 1970. *WR 140: 116*
[Carnegie Mus., Pittsburgh, Pa.] Studies were made with use of radiographs of variations in the feather tracts associated with species, race, sex, age, climate, season, and population.--Courtesy/ Paul A. Stewart.

Ford, Julian. VARIATION IN THE *SERICORNIS FRONTALIS MACULATUS* SUBSPECIES GROUP. *Emu* 70(4): 168-172, 2 figs. Oct. 1970. *WR 140: 116*
[Western Australian Inst. Technol., Bentley, Australia.] Variation between *S. f. maculatus, balstoni,* and *mellori* is by smooth clines except in the transition between *maculatus* and *mellori*, where there are steps in the gradients of many characters, and in the transition between *maculatus* and *balstoni*, where there is a fairly sharp change in the color of the abdomen.--From summ.

Fry, C. H., J. S. Ash, and I. J. Ferguson-Lees. SPRING WEIGHTS OF SOME PALAEARCTIC MIGRANTS AT LAKE CHAD. *Ibis* 112(1): 58-82, 10 figs. Jan. 1970. *WR 140: 116*
[Univ. Aberdeen, Aberdeen, Scotland.] About 2,400 Palaearctic migrants of 29 spp. were mist-netted in beds of bulrush and thickets of saltbrush. Some 300 of these were collected for fat analysis; the remainder were released after measurement and ringing, and provided 275 retraps during the course of the study. Data were supplemented by further netting in late April and May. Yellow

wagtails fed almost exclusively on midges. Sedge warblers fed on small insects and spiders, and whitethroats on *Salvadora* fruits. Sedge warblers and some other chiefly insectivorous species turned to a diet including berries shortly before emigrating. Differences between the mean weight curves of first-caught and retrapped birds are discussed, and it is concluded that in some species there were both through-migrant and temporarily-resident populations at Malamfatori.--From summ.

Hendricks, Helen. AN ALBINO ROBIN. *Ind. Audubon Quart.* 48(1): 36. Feb. 1970. *WR 140: 117*
[Indianapolis, Ind.]

Holyoak, D. THE FUNCTION OF THE PALE EGG COLOUR OF THE JACKDAW. *Bull. British Ornithol. Club* 89: 159. 1969. [From Auk 87(4), 1970.] *WR 140: 117*

Jackson, Jerome A. CHARACTER VARIATION IN THE HAIRY WOODPECKER *(DENDROCOPOS VILLOSUS). Ph.D. thesis, Univ. Kans.* 205 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 117*

James, Frances C. GEOGRAPHIC SIZE VARIATION IN BIRDS AND ITS RELATIONSHIP TO CLIMATE. *Ecology* 51(3): 365-390, 14 figs. Late Spring 1970. *WR 140: 117*
[Univ. Ark., Fayetteville.] Gradually increasing size clines occur northward and westward from Florida in hairy woodpeckers *(Dendrocopos villosus)*, downy woodpeckers *(D. pubescens)*, blue jays *(Cyanocitta cristata)*, Carolina chickadees *(Parus carolinensis)*, white-breasted nuthatches *(Sitta carolinensis)*, and eastern meadowlarks *(Sturnella magna)*. Birds of a given species are relatively larger farther south in the Appalachian mountains and smaller farther north in the Mississippi River valley than nearby birds of the same species.--Courtesy/ Paul A. Stewart.

Killpack, Merlin L. NOTES ON SAGE THRASHER NESTLINGS IN COLORADO. *Condor* 72(4): 486-488. Oct. 1970. *WR 140: 117*
[Ogden High School, Ogden, Utah.] Growth of nestling sage thrashers *(Oreoscoptes montanus).*--Courtesy/ Paul A. Stewart.

Korodi Gál, János, and Zoltán Nagy. ÜBER DEN NAHRUNGSBEDARF BEI VERSCHIEDENEN WÄRMEBEDINGUNGEN GEHALTEN VÖGEL. [NUTRITIONAL REQUIREMENTS OF BIRDS MAINTAINED AT DIFFERENT TEMPERATURES.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 28: 113-125, illus. 1965/1966. [From Biol. Abstr. 51(22), 1970. In German.] *WR 140: 117*
"Erithacus rubecula, Carduelis carduelis, and *Passer domesticus."*

Lasiewski, Robert C., William R. Dawson, and George A. Bartholomew. TEMPERATURE REGULATION IN THE LITTLE PAPUAN FROGMOUTH, *PODARGUS OCELLATUS. Condor* 72(3): 332-338, 7 figs. July 1970. *WR 140: 117*
[Univ. Calif., Los Angeles.] Discusses body temperature, oxygen consumption, evaporative water loss, breathing rate, heart rate, buccal and pharyngeal temperatures during evaporative cooling, and effects of solar radiation on body temperature.--Courtesy/ Paul A. Stewart.

Moldenhauer, Ralph Roy. THE WATER ECONOMY OF THE SAGE SPARROW, *AMPHISPIZA BELLI NEVADENSIS* (RIDGWAY). *Ph.D. thesis, Oreg. State Univ.* 67 p. 1969. [From Dissertation Abstr. Intern. 30(4B), 1969.] *WR 140: 117*

Moldenhauer, Ralph R., and John A. Wiens. THE WATER ECONOMY OF THE SAGE SPARROW, *AMPHISPIZA BELLI NEVADENSIS. Condor* 72(3): 265-275, 2 figs. July 1970. *WR 140: 117*
[Oregon State Univ., Corvallis.] Courtesy/ Paul A. Stewart.

Moreau, R. E., and R. M. Dolp. FAT, WATER, WEIGHTS AND WING-LENGTHS OF AUTUMN MIGRANTS IN TRANSIT ON THE NORTHWEST COAST OF EGYPT. *Ibis* 112(2): 209-228, 4 figs. Apr. 1970. *WR 140: 118*

[Curlews, Sutton St. Nicholas, Hereford, England.] Summary: Data are presented for the fat and water contents of 410 specimens of 11 species of trans-Saharan migrants collected on the northwest coast of Egypt in autumn. Mean fat contents vary from 37% of lean dry weight in *Hirundo rustica* to 110% in *Sylvia communis*. There is also much variation in the range of fat contents within individual species, *Muscicapa striata* and *Lanius collurio* being exceptionally closely grouped and *P. phoenicurus* widely dispersed. The results for each species are discussed in relation to their migratory circumstances. On the basis that the birds concerned would have started to cross the eastern Mediterranean with at least 1.5 times as much fat as they contained on landing in Egypt, comparisons are made with data for spring migrants in western Africa and with American trans-Gulf migrants. Water contents, discussed as % of lean dry weight, show considerable variation within each species: the coefficient correlating this percentage with % fat is around 0.50 except in *Lanius* (0.98) and *Oriolus* (0.92). On investigating the relationship between wing-length and lean dry weight, we did not find a strong correlation in any of the species and caution in accepting conclusions to the contrary is indicated.

Nicolai, J. DIE ISOLIERTE FRUHMAUSER DER FARBMERKMALE DES KOPFGEFIEDERS BEI *URAEGINTHUS GRANATINUS* (L.) UND *U. IANTHINOGASTER* REICHW. (ESTRILDIDAE). [THE ISOLATED EARLY MOLTING OF CHARACTERISTICALLY-COLORED HEAD FEATHERS IN *URAEGINTHUS GRANATINUS* (L.) AND *U. IANTHINOGASTER* REICHW. (ESTRILDIDAE).] *Z. Tierpsychol.* 25: 854-861. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 118*

Niemeyer, Hans. VERSUCH EINER BIOMETRISCHEN ANALYSE DER FLUEGELLAENGE HELGOLAENDER FITISLAUBSANGER *(PHYLLOSCOPUS TROCHILUS)* UNTER BERUECKSICHTIGUNG DES EINFLUSSES VON ALTER, GESCHLECHT UND DURCHZUGSZEIT. [ATTEMPT OF A BIOMETRIC ANALYSIS OF THE LENGTH OF WINGS OF *PHYLLOSCOPUS TROCHILUS* UNDER CONSIDERATION OF INFLUENCES OF AGE, SEX AND TIME OF PASSAGE.] *Zool. Anz.* 183(5/6): 326-341, illus. 1969. [From Biol. Abstr. 51(24), 1970. In German.] *WR 140: 118*

[Munchausenstrasse 8, Gottingen, Germany.]

Olson, Storrs L. SPECIALIZATIONS OF SOME CAROTENOID-BEARING FEATHERS. *Condor* 72(4): 424-430, 3 figs. Oct. 1970. *WR 140: 118*

[Johns Hopkins Univ., Baltimore, Md.] Courtesy/ Paul A. Stewart.

Orr, Yosef. TEMPERATURE MEASUREMENTS AT THE NEST OF THE DESERT LARK *(AMMOMANES DESERTI DESERTI)*. *Condor* 72(4): 476-478, 2 figs. Oct. 1970. *WR 140: 118*

[Kibbutz Mashabei-Sade, P.O. Ramat-Negev, Israel.] The nests were facing north and were shaded from the midday sun by an overhang. A rapid rise in nest temperature occurs immediately after sunrise, but northwesterly breezes help keep nest temperatures comfortable during the day.--Courtesy/ Paul A. Stewart.

Pearson, D. J. WEIGHTS OF RED-BACKED SHRIKES ON AUTUMN PASSAGE IN UGANDA. *Ibis* 112(1): 114-115. Jan. 1970. *WR 140: 118*

[Brouses, Sibton, Saxmundham, Suffolk, England.] *"Lanius collurio."*

Ruge, Klaus. ZUR BIOLOGIE DES DREIZEHENSPECHTS *PICOIDES TRIDACTYLUS* L.: II. BEOBACHTUNGEN ZUR MAUSER. [THE BIOLOGY OF THREE-TOED WOODPECKERS *PICOIDES TRIDACTYLUS* L.: II. OBSERVATIONS ON THE MOLT.] *Ornithol. Beob.* 66(2): 42-54, illus. 1969. [From Biol. Abstr. 51(23), 1970. In German with English summ.] *WR 140: 118*

[Staatliche Vogelschutzwarte, Ludwigsburg, Germany.]

Schuphan, I., and U. Hesler. KENNZEICHEN FÜR ALTER UND GESCHLECHT BEI DER ZIPPAMMER *(EMBERIZA CIA)*. [CHARACTERS FOR THE AGING AND SEXING OF THE ROCK-BUNTING *(EMBERIZA CIA)*.] *Vogelwarte* 23: 77-79. 1965. [From Ibis 112(3), 1970. In German.] *WR 140: 118*

BIRDS-MORPHOLOGY & PHYSIOLOGY--Continued

Sealy, Spencer G. EGG TEETH AND HATCHING METHODS IN SOME ALCIDS. *Wilson Bull.* 82(3): 289-293. Sept. 1970. *WR 140: 119*
[Univ. Mich., Ann Arbor.] Each alcid species examined (21 spp.) possessed an egg tooth on the culmen near the tip of the maxilla.--Courtesy/ Paul A. Stewart.

Seel, D. C. NESTLING SURVIVAL AND NESTLING WEIGHTS IN THE HOUSE SPARROW AND TREE SPARROW *PASSER* SPP. AT OXFORD. *Ibis* 112(1): 1-14, 3 figs. Jan. 1970. *WR 140: 119*
[Nature Conservancy, Penrhos Road, Bangor, North Wales.] The population of *Passer domesticus* was much closer to a critical limiting factor, e.g. food supply, than that of *P. montanus*. This may account for the striking differences between the two species in their nestling survival rates and their nestling weights in relation to brood-size; in particular, the success of the larger broods of *P. montanus* may have been a temporary phenomenon.--From summ.

Short, Lester L. REVERSED SEXUAL DIMORPHISM IN TAIL LENGTH AND FORAGING DIFFERENCES IN WOODPECKERS. *Bird-Banding* 41(2): 85-92. Apr. 1970. *WR 140: 119*
[Am. Mus. Nat. Hist., New York, N.Y.] Female woodpeckers of certain species, including *Dendrocopos nuttallii, D. borealis,* at least one race of *D. pubescens,* and probably *Melanerpes striatus, M. hypopolius, Xiphidiopicus percussus,* and *Sphyrapicus varius,* have tails that are longer than those of males. A possible functional explanation for the longer tail of females is the use of the tail as a supporting prop for excavating, requiring a shorter tail in males that do more excavating.--From summ. Courtesy/ Paul A. Stewart.

Stresemann, E., and V. Stresemann. DIE MAUSER DER SCHOPFKUCKUCKE *(CLAMATOR).* [THE MOLT OF THE CUCKOO *(CLAMATOR).*] *J. Ornithol.* 110: 192-204. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 119*

Stresemann, E., and V. Stresemann. DIE MAUSER EINIGER *EMBIRIZA*-ARTEN I. [THE MOLT OF SOME SPECIES OF *EMBERIZA.* I.] *J. Ornithol.* 110: 291-313. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 119*
"E. melanocephala, E. bruniceps, and *E. aureola."*

Stresemann, E., and V. Stresemann. DIE MAUSER EINIGER *EMBERIZA*-ARTEN II. [THE MOLT OF SOME SPECIES OF *EMBERIZA.* II.] *J. Ornithol.* 110: 475-481. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 119*
"E. hortulana."

Taylor, Walter Kingsley. MOLTS OF THE VERDIN, *AURIPARUS FLAVICEPS. Condor* 72(4): 493-496. Oct. 1970. *WR 140: 119*
[Fla. Tech. Univ., Orlando.] Courtesy/ Paul A. Stewart.

BIRDS--BEHAVIOR

Abbott, Jackson M. HOUSE SPARROWS TAKE OVER A FLICKER NEST HOLE. *Raven* 40(2): 38. June 1969. *WR 140: 119*
[8501 Doter Drive, Alexandria, Va.]

Alcock, John. PUNISHMENT LEVELS AND THE RESPONSE OF BLACK-CAPPED CHICKADEES *(PARUS ATRICAPILLUS)* TO THREE KINDS OF ARTIFICIAL SEEDS. *Animal Behaviour* 18 (3): 592-599, 1 fig. Aug. 1970. *WR 140: 119*
[Univ. Wash., Seattle.] Rejection of the salted mealworm seeds was neither speedy nor well fixed compared to the empty seed despite the fact that there was a higher level of negative reinforcement associated with the salted mealworm seed. The rapid and stable avoidance of the empty and emetic seeds may be attributed to the absence of any sort of food reward in either kind of seed. The nutritive value of a prey, rather than its associated punishing qualities, will determine the degree of protection from predation enjoyed by that prey.--From summ.

Bauer, W., O. v. Helversen, M. Hodge, and J. Martens. A. BERMERKENSWERTE BRUT-NACHWEISE AUS GRIECHENLAND. [A. NOTEWORTHY BREEDING INFORMATION (ON THE BIRDS) OF GREECE.] *J. Ornithol.* 110: 79-83. 1969. [From Auk 87(4), 1970. In German with English summ.] *WR 140: 120*

Bell, Joseph, Donald Bruning, and Andrew Winnegar. BLACK-NECKED SCREAMERS SEEN FEEDING A CHICK. *Auk* 87(4): 805. Oct. 1970. *WR 140: 120*
[N.Y. Zoological Park, Bronx.] Captive black-crested screamers *(Chauna chavaria)* picked up food in their beaks and placed it in the open beak of their single chick.--Courtesy/ Paul A. Stewart.

Berndt, R., and H. Sternberg. ALTERS- UND GESCHLECHTSUNTERSCHIEDE IN DER DISPERSION DES TRAUERSCHNÄPPERS *(FICEDULA HYPOLEUCA)*. [AGE AND SEX DISCRIMINATION IN THE DISPERSION OF THE PIED FLYCATCHER *(FICEDULA HYPOLEUCA)*.] *J. Ornithol.* 110: 22-26. 1969. [From Auk 87(3), 1970. In German with English summ.] *WR 140: 120*

Bocheński, Z. NESTING OF THE EUROPEAN MEMBERS OF THE GENUS *TURDUS* LINNAEUS 1758 (AVES). *Acta Zool. Cracov* 13: 349-440. 1968. [From Ibis 112(2), 1970.] *WR 140: 120*

Brackbill, Hervey. A POLYGYNOUS HOUSE WREN. *Bird-Banding* 41(2): 118-121. Apr. 1970. *WR 140: 120*
[2620 Poplar Dr., Baltimore, Md.] A male house wren *(Troglodytes aedon)* had two mates at nests about 45 yards apart. Three successful broods were raised; a fourth was deserted.--Courtesy/ Paul A. Stewart.

Brackbill, Hervey. SLATE-COLORED JUNCO WINTERING DATES AT BALTIMORE. *Bird-Banding* 41(2): 131. Apr. 1970. *WR 140: 120*
[2620 Poplar Dr., Baltimore, Md.] "Chiefly from about 10 November...[to] 14 April."--Courtesy/ Paul A. Stewart.

Brackbill, Hervey. TUFTED TITMOUSE BREEDING BEHAVIOR. *Auk* 87(3): 522-536. July 1970. *WR 140: 120*
[2620 Poplar Dr., Baltimore, Md.] The following are discussed: sexual dominance, pair formation, permanency of mating, courtship feeding, nest-site selection, copulation, nest building, eggs, hatching, incubation period, feeding nestlings, brooding, nest sanitation, nestling period, period of dependency, dispersal of young, number of broods, feeding range, voice, longevity, and ectoparasites.--Courtesy/ Paul A. Stewart.

Braun, Eldon J. METABOLISM AND WATER BALANCE OF THE GILA WOODPECKER AND GILDED FLICKER IN THE SONORAN DESERT. *Ph.D. thesis, Univ. Ariz.* 106 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 120*
The metabolic response, thermoregulation and water balance of *Colaptes auratus* and *Centurus uropygalis* were studied.

Bremond, J. C. PARAMÈTRES PHYSIQUES ASSURANT LA SPÉCIFICITÉ DU CHANT CHEZ DE POUILLOT SIFFLEUR *(PHYLLOSCOPUS SIBILATRIX)*. [PHYSICAL PARAMETERS ENSURING THE PRECISION OF SONG IN THE WOOD WARBLER *(PHYLLOSCOPUS SIBILATRIX)*.] *Revue Comportement Animal* 3: 97-98. 1968. [From Ibis 112(1), 1970.] *WR 140: 120*

Brooks, William S., and Susan E. Garrett. THE MECHANISM OF PIPPING IN BIRDS. *Auk* 87(3): 458-466, 1 fig. July 1970. *WR 140: 120*
[Ripon Coll., Ripon, Wis.] The pip is produced by whole-body convulsions that press the beak through the shell, the beak being wedged between the shell and the chick's lateral thoracic area.--Courtesy/ Paul A. Stewart.

Brosset, Andre, and Claude Chappuis. ASPECTS ÉCOLOGIQUES DE L'ÉVOLUTION DES ÉMISSIONS SONORES CHEZ LES OISEAUX. [ECOLOGICAL ASPECTS OF THE EVOLUTION OF SONOROUS EMISSIONS IN BIRDS.] *C. R. Hebd. Seance Acad. Sci. Ser. D Sci. Nat.* (Paris) 268(7): 1113-1114. 1969. [From Biol. Abstr. 51(15), 1970. In French.] *WR 140: 120*
[Mus. Nat. Hist. Natur., Talence, Gironde, France.]

XUM

Buckley, P. A., and F. G. Buckley. NOTES ON THE DISTRIBUTION OF SOME PUERTO RICAN BIRDS AND ON THE COURTSHIP BEHAVIOR OF WHITE-TAILED TROPICBIRDS. *Condor* 72(4): 483-486. Oct. 1970. *WR 140: 121*
[Hofstra Univ., Hempstead, Long Island, N.Y.] Contains observations on 12 spp.--Courtesy/ Paul A. Stewart.

Calder, William A. USE OF DIPPER NEST BY MOUNTAIN BLUEBIRD. *Condor* 72(4): 498. Oct. 1970. *WR 140: 121*
[Univ. Ariz., Tucson.] Courtesy/ Paul A. Stewart.

Clark, George A., Jr. APPARENT LACK OF THE DOUBLE-SCRATCH IN TWO SPECIES OF *SPIZELLA*. *Condor* 72(3): 370. July 1970. *WR 140: 121*
[Univ. Conn., Storrs.] *"Spizella pusilla* and *S. passerina."*--Courtesy/ Paul A. Stewart.

Clark, George A., Jr. AVIAN BILL-WIPING. *Wilson Bull.* 82(3): 279-288. Sept. 1970. *WR 140: 121*
[Univ. Conn., Storrs.] The occurrence of bill-wiping has been noted in more than 25 families of birds. Its function is unknown.--Courtesy/ Paul A. Stewart.

Conrads, K. BEOBACHTUNGEN AM ORTOLAN *(EMBERIZA HORTULANA* L.*)* IN DER BRUTZEIT. [OBSERVATIONS OF THE ORTOLAN *(EMBERIZA HORTULANA)* DURING THE BREEDING SEASON.] *J. Ornithol.* 110: 379-420. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 121*

Cunningham-van Someren, G. R. ANIMATED PERCHES AND FEEDING ASSOCIATIONS OF BIRDS IN THE SUDAN. *Bull. British Ornithol. Club* 90(5): 120-122. Oct. 1970. *WR 140: 121*
The animated perch (larger bird or mammal) is used as a resting place and as an aid to procuring food. Several associations are discussed briefly.

Cunningham-van Someren, G. R. ON *PRODOTISCUS INSIGNIS* (CASSIN) PARASITISING *ZOSTEROPS ABYSSINICA* GUÉRIN. *Bull. British Ornithol. Club* 90(5): 129-131. Oct. 1970. *WR 140: 121*
Nestling stage lasted 20 days; food consisted of insects.

Dickson, R. C. BIRD PREDATORS AT PASSERINE ROOSTS. *British Birds* 63(2): 85-86. 1970. *WR 140: 121*
[3 Galloway Place, Stranraer, Wigtownshire, Scotland.]

Dow, Douglas D. COMMUNAL BEHAVIOUR OF NESTING NOISY MINERS. *Emu* 70(3): 131-134, 2 figs. July 1970. *WR 140: 121*
[Univ. Queensland, St. Lucia, Brisbane, Australia.] Observations of *Myzantha melanocephala* at seven nests indicated they are communal breeders, with several birds visiting the nests, feeding the nestlings, and feeding the fledged young. At the most intensively studied nest, most activity was by two birds, although there were at least eight other visitors. Only one female incubated and brooded. Visitors arrived at the nest most frequently when the incubating female was absent. Visits varied considerably in number, but were usually between 30 and 50 per hour, many more than recorded for most passerine birds.--From abstr.

DuMont, Paul G. NOTES DURING SUN ECLIPSE AT MOUTH OF CHESAPEAKE BAY. *Atlantic Nat.* 25(2): 88-89. Summer 1970. *WR 140: 121*
Description of the behavior of gulls, ducks, and shorebirds during the eclipse.

Eskin, Arnold. THE SPARROW CLOCK: BEHAVIOR OF THE FREE RUNNING RHYTHM AND ENTRAINMENT ANALYSIS. *Ph.D. thesis, Univ. Texas at Austin.* 234 p. 1969. [From Dissertation Abstr. Intern. 30(7B), 1970.] *WR 140: 121*
Changes in the free running period of *Passer domesticus* were analysed and compared to that of *Peromyscus* spp. Results indicated that more than one oscillator underlies the activity rhythm of *P. domesticus*.

Ficken, M. S., and R. W. Ficken. REPRODUCTIVE ISOLATING MECHANISMS IN THE BLUE-WINGED WARBLER-GOLDEN-WINGED WARBLER COMPLEX. *Evolution* (Lancaster, Pa.) 22: 166-179. 1968. [From Ibis 112(1), 1970.] *WR 140: 122*

Ficken, R. W., M. S. Ficken, and D. H. Morse. COMPETITION AND CHARACTER DISPLACEMENT IN TWO SYMPATRIC PINE-DWELLING WARBLERS *(DENDROICA*, PARULIDAE). *Evolution* (Lancaster, Pa.) 22: 307-314. 1968. [From Ibis 112(1), 1970.] *WR 140: 122*

Fisher, H. I., and M. L. Fisher. THE VISITS OF LAYSAN ALBATROSSES TO THE BREEDING COLONY. *Micronesia* 5: 173-221. 1969. [From Auk 87(4), 1970.] *WR 140: 122*

Fuchs, Eduard. ZUR BIOLOGIE DER WASSERAMSEL *CINCLUS CINCLUS*. [ON THE BIOLOGY OF THE DIPPER *CINCLUS CINCLUS*.] *Ornithol. Beob.* 67(1): 3-14, illus. 1970. [From Biol. Abstr. 51(22), 1970. In German with English summ.] *WR 140: 122*
Breeding behavior.

Gibbs, Wallace. BEHAVIOR OF WAXWINGS DURING A SOLAR ECLIPSE. *Atlantic Nat.* 25(2): 86-87, [1 fig.]. Summer 1970. *WR 140: 122*

Gwinner, E. UNTERSUCHUNGEN ZUR JAHRESPERIODIK VON LAUBSÄNGERN. [INVESTIGATIONS OF THE ANNUAL EVENTS FOR *PHYLLOSCOPUS* SPP.] *J. Ornithol.* 110: 1-21. 1969. [From Auk 87(3), 1970. In German with English summ.] *WR 140: 122*

Hald-Mortensen, P. [ON THE BREEDING OF THE DIPPER *(CINCLUS CINCLUS* [L.]) AT ÅRHUS IN 1964, WITH OBSERVATIONS ON DIPPER WINTERING IN DENMARK.] *Flora & Fauna* 75: 69-79. 1969. [From Ibis 112(2), 1970. In Danish with English summ.] *WR 140: 122*

Hall, John Ruthven. SYNCHRONY AND SOCIAL STIMULATION IN COLONIES OF THE BLACKHEADED WEAVER *PLOCEUS CUCULLATUS* AND VIEILLOT'S BLACK WEAVER *MELANOPTERYX NIGERRIMUS*. *Ibis* 112(1): 93-104, 6 figs. Jan. 1970. *WR 140: 122*
[Univ. Newcastle upon Tyne, Newcastle upon Tyne, England.] Nest-building and breeding are highly synchronized within colonies. Uniform responses to rain may partly account for this synchrony, but fluctuations of activity in neighboring colonies are relatively unsynchronized, suggesting that social stimulation is also an important factor. This is supported by direct observations of social interactions and by the fact that small colonies are relatively less successful than larger ones, apparently because the pair-formation process may fail in the absence of sufficient social stimulation.--From summ.

Hamner, William M., and John Stocking. WHY DON'T BOBOLINKS BREED IN BRAZIL? *Ecology* 51(4): 743-751, 3 figs. Summer 1970. *WR 140: 122*
[Univ. Calif., Davis.] "After termination of a period of absolute insensitivity to light in late October, bobolinks [*Dolichonyx oryzivorus*] become progressively sensitive to shorter and shorter daylengths, so that sensitivity to day length becomes maximal in April. When the days begin to lengthen in May rapid testicular growth can be elicited by photoperiods as short as any normally received. The mechanism that changes the sensitivity to daylength during the winter and that which is responsible for distinguishing the increase in daylength in the spring is unknown, but it is different from the mechanism used by other birds that have been appropriately investigated and may not be circadian."--Courtesy/ Paul A. Stewart.

Hardy, John William. DUPLEX NEST CONSTRUCTION BY HOODED ORIOLE CIRCUMVENTS COWBIRD PARASITISM. *Condor* 72(4): 491. Oct. 1970. *WR 140: 122*
[Occidental Coll., Los Angeles, Calif.] Courtesy/ Paul A. Stewart.

Harriott, Maude Crawford. BREEDING BEHAVIOR OF THE ANHINGA. *Fla. Nat.* 43 (4): 138-143, illus. Oct. 1970. *WR 140: 123*
Pairing, nest building, incubation, care and growth of the young, and behavior of the young after they leave the nest are discussed.

Harrison, C. J. O. FOOD-CARRYING AND THE TRANSPORT OF NEST-MATERIAL. *Ibis* 112(1): 105-106. Jan. 1970. *WR 140: 123*
[British Mus. Nat. Hist., London, England.] "There seems therefore to be a direct relationship between the transportation of food to the young and the carrying of nest-material to a nest-site."

Harrison, C. J. O., and C. B. Frith. NESTS AND EGGS OF SOME NEW GUINEA BIRDS. *Emu* 70(4): 173-178. Oct. 1970. *WR 140: 123*
[British Mus. Nat. Hist., Cromwell Rd., London, England.] A collection of nests and eggs of 26 New Guinea species is described. Ten apparently have not been described before.--From summ.

Hauri, Rolf. ZUR LEBENSWEISE DES MAUERLÄUFERS *TICHODROMA MURARIA* IM WINTER. [MODE OF LIFE OF THE WALLCREEPER *TICHODROMA MURARIA* IN THE WINTER.] *Ornithol. Beob.* 67(1): 14-20. 1970. [From Biol. Abstr. 51(21), 1970. In German.] *WR 140: 123*

Hellebrekers, W. Ph. J. OOELOGISCHE EN NIDOLOGISCHE MEDEDELINGEN IN 1969 (EN EERDER). [COMMUNICATIONS DURING 1969 (AND EARLIER) ON EGGS AND BIRD NESTS.] *Limosa* 42(3/4): 195-197. 1969. [From Biol. Abstr. 51(20), 1970. In Dutch.] *WR 140: 123*

Heppleston, P. B. THE FUNCTION OF OYSTERCATCHER PIPING BEHAVIOUR. *British Birds* 63(3): 133-135. 1970. *WR 140: 123*
[Coll. Agr., Junction Rd., Kirkwall, Orkney, Scotland.] "Piping is associated with the intrusion of strange birds into an occupied territory."

Hespenheide, Henry August III. NICHE OVERLAP AND THE EXPLOITATION OF FLYING INSECTS AS FOOD BY BIRDS, WITH SPECIAL REFERENCE TO THE TYRANNIDAE. *Ph.D. thesis, Univ. Pa.* 101 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 123*

Hjorth, I. A COMMENT ON GRAPHIC DISPLAYS OF BIRD SOUNDS AND ANALYSES WITH A NEW DEVICE, THE MELOGRAPH MONA. *J. Theoret. Biol.* 26: 1-10. 1970. [From Auk 87(4), 1970.] *WR 140: 123*

Hogstad, Olav. MOVEMENTS OF WINTER FLOCKS OF GOLDCRESTS, *REGULUS REGULUS* (L.). *Nytt. Mag. Zool. Oslo* 18(1): 33-39, illus. 1970. [From Biol. Abstr. 51(20), 1970.] *WR 140: 123*
[Univ. Oslo, Oslo, Norway.]

Hold, Trevor. THE NOTATION OF BIRD-SONG: A REVIEW AND A RECOMMENDATION. *Ibis* 112(2): 151-172, 11 figs. Apr. 1970. *WR 140: 123*
[Univ. Liverpool, Liverpool, England.] Summary: The reasons for a systematic form of notation of bird-song are discussed. Though the sound spectrograph will remain the primary tool in any study of bird-vocalization, there is still a need for a simple, comprehensive notation for the bird-watcher. This will act as a supplement to the bird-song recordings now available. After a survey of various attempts at bird-notation, from syllabic notation to the sophisticated graph-methods suggested by Stadler & Schmitt, A. A. Saunders and Gladys Page-Wood, recommendations for a comprehensive notation are made, illustrated by notated examples of song-phrases from the nightingale.

Hoy, G. ÜBER BRUTBIOLOGIE UND EIER EINIGER VÖGEL AUS NORDWEST-ARGENTINIEN. [ON THE BREEDING BIOLOGY AND EGGS OF SOME BIRDS OF NORTHWEST ARGENTINA.] *J. Ornithol.* 109: 425-433. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 123*

Immelman, K., and G. Immelman. ZUR FORTPFLANZUNGSBIOLOGIE EINIGER VÖGEL IN DER NAMIB. [ON THE REPRODUCTIVE BIOLOGY OF SOME BIRDS IN THE NAMIB (SOUTH WEST AFRICA).] *Bonn. Zool. Beitr.* 19: 329-339. 1968. [From Ibis 112(2), 1970. In German.] *WR 140: 124*
The breeding of African desert birds did not seem to be strongly influenced by rainfall.

Jackson, H. Desmond. SWIMMING ABILITY OF THE BARN SWALLOW. *Auk* 87(3): 577. July 1970. *WR 140: 124*
[P.O. Box 8014, Causeway, Rhodesia.] *"Hirundo rustica."*--Courtesy/ Paul A. Stewart.

Jakobs, Bernard. UEBERWINTERUNG VON SINGDROSSEL, WASSERPIEPER UND ZWERGSCHNEPFE IN DER TRIER TALWEITUNG. [OVERWINTERING OF *TURDUS PHILOMENOS*, OF *ANTHUS SPINOLETTA*, AND OF *LYMNOCRYPTES MINIMUS* IN THE ENLARGED PART OF THE TRIER VALLEY.] *Emberiza* 2(1): 3-7. 1969. [From Biol. Abstr. 51(24), 1970. In German.] *WR 140: 124*
[Helenenstrasse 27, Trier, Germany.]

Jensen, R. A. C., and M. K. Jensen. ON THE BREEDING BIOLOGY OF SOUTHERN AFRICAN CUCKOOS. *Ostrich* 40: 163-181. 1969. [From Auk 87(4), 1970.] *WR 140: 124*

Johnston, Richard F. CHARACTER VARIATION AND ADAPTATION IN EUROPEAN SPARROWS. *Syst. Zool.* 18(2): 206-231, illus. 1969. [From Biol. Abstr. 51(15), 1970.] *WR 140: 124*
[Mus. Nat. Hist., Univ. Kans., Lawrence.] *"Passer domesticus, P. hispaniolensis* and their hybrids."

Keith, James O., Leon A. Woods, Jr., and Eldridge G. Hunt. REPRODUCTIVE FAILURE IN BROWN PELICANS ON THE PACIFIC COAST. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 56-63. 1970. *WR 140: 124*
[Denver Wildl. Res. Center, Denver, Colo.]

Kennedy, R. J. ABNORMAL FEATHER WEAR IN GUILLEMOTS. *British Birds* 63(1): 34-36 + 1 pl. 1970. *WR 140: 124*
[Univ. Newcastle upon Tyne, Newcastle upon Tyne, England.] The wing-coverts and feathers of the rump and lower mantle were heavily abraded and pale brown in color. The condition is possibly caused by pollution at sea with a strong corrosive.

Kerwin, M. Larry. WINTER FOOD HABITS OF THE COMMON REDPOLL AND THE HORNED LARK IN SASKATCHEWAN. *Blue Jay* 28(3): 121-122. Sept. 1970. *WR 140: 124*
[Regina, Saskatchewan, Canada.] The most important food item in the winter diet of *Acanthis flamea* was Russian thistle, while wheat comprised the bulk of the winter diet of *Eremophila alpestris.*

Kilham, Lawrence. FEEDING BEHAVIOR OF DOWNY WOODPECKERS. I. PREFERENCE FOR PAPER BIRCHES AND SEXUAL DIFFERENCES. *Auk* 87(3): 544-556. July 1970. *WR 140: 124*
[Dartmouth Med. School, Hanover, N.H.] Downy woodpeckers *(Dendrocopos pubescens)* fed on paper birch more often than on other species of trees, apparently attracted by a coccid, *Xylococculus betulae.* The female of a pair fed on the middle and lower portions of the trees, and the male fed on the top third portions.--Courtesy/ Paul A. Stewart.

Kneutgen, J. "MUSIKALISCHE" FORMEN IM GESANG DER SCHAMADROSSEL *(KITTACINCLA MACROURA* GM.) UND IHRE FUNKTIONEN. [MUSICAL FORMS IN THE SONG OF THE SHAMA BIRD *(KITTACINCLA MACROURA)* AND THEIR FUNCTION.] *J. Ornithol.* 110: 245-285. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 124*

Kniprath, E. DAS BADEN DES EISVOGELS. [THE BATHING OF KINGFISHERS.] *Bonner Zool. Beitr.* 20(1-3): 200-206. 1969. [From Biol. Abstr. 51(18), 1970. In German.] *WR 140: 125*
[An der Asbach 18, Bonn, Germany.]

Koch, Robert F., Armand E. Courchesne, and Charles T. Collins. SEXUAL DIFFERENCES IN FORAGING BEHAVIOR OF WHITE-HEADED WOODPECKERS. *Bull. S. Calif. Acad. Sci.* 69(1): 60-64. 1970. [From Biol. Abstr. 51(16), 1970.] *WR 140: 125*
[Calif. State Coll., Long Beach.] *"Dendrocopos albolarvatus."*

Köpke, Gerd. BEOBACHTUNGEN AN EINER MISCHSÄNGER-DORNGRASMÜCKE *(SYLVIA COMMUNIS).* [OBSERVATIONS OF A "MIXED SINGING" WHITETHROAT *(SYLVIA COMMUNIS).*] *Ornithol. Mitteil.* 22(7): 146-149. July 1970. In German with English summ. *WR 140: 125*
[Von-der-Marck-Strasse 8, Hamm, Germany.] Observations of a whitethroat singing its territorial song followed by the "flute" song of the blackcap *Sylvia atricapilla.*

Korodi-Gal, Ioan. CONTRIBUTII LA CUNOASTEREA BIOLOGIEI REPRODUCERII SI HRANEI PUILOR STURZULUI CINTATOR *(TURDUS ERICETORUM PHILOMELOS* BREHM*).* [CONTRIBUTIONS TO THE KNOWLEDGE OF REPRODUCTION BIOLOGY AND FEEDING OF THRUSH FLEDGELINGS *(TURDUS ERICETORUM PHILOMELOS* BREHM*).*] *Comun. Zool.* 1969: 33-50, illus. 1969. [From Biol. Abstr. 51(24), 1970. In Romanian with Russian and English summ.] *WR 140: 125*
[Soc. Stiint. Biol., Bucharest, Romania.]

Korodi Gal, J. BEITRÄGE ZUR KENNTNIS DER BRUTBIOLOGIE DER AMSEL *(TURDUS MERULA* L.*)* UND ZUR ERNÄHRUNGSDYNAMIK IHRER JUNGEN. [CONTRIBUTION TO THE KNOWLEDGE OF THE BLACKBIRD *(TURDUS MERULA* L.*)* AND THE FEEDING DYNAMICS OF ITS YOUNG.] *Zool. Abh.* (Dresden) 29: 25-53. 1967. [From Ibis 112(2), 1970. In German.] *WR 140: 125*

Krebs, J. R. THE EFFICIENCY OF COURTSHIP FEEDING IN THE BLUE TIT *PARUS CAERULEUS. Ibis* 112(1): 108-110, 1 fig. Jan. 1970. *WR 140: 125*
[Dept. Zool., Parks Road, Oxford, England.]

Kulczycki, A., and M. Mazur-Gierasińska. NESTING OF HOUSE SPARROW *PASSER DOMESTICUS* (LINNAEUS, 1758). *Acta Zool. Cracoviensia* 13: 231-250. 1968. [From Auk 87(3), 1970. In English with Polish summ.] *WR 140: 125*

Leck, Charles Frederick. THE SEASONAL ECOLOGY OF FRUIT AND NECTAR EATING BIRDS IN LOWER MIDDLE AMERICA. *Ph.D. thesis, Cornell Univ.* 126 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 125*
The feeding behavior and ecology of fruit and nectar eating birds was studied in Costa Rica, Panama, and the Canal Zone. The main areas of investigation included the effects of seasonal changes in abundances of the natural foods, and the ecological impact of migrants on the residents.

Lennerstedt, I. NIGHT REST AND NEST-VISIT FREQUENCY AT FIVE NESTS OF PIED FLYCATCHER, *FICEDULA HYPOLEUCA* (PALL.), IN SWEDISH LAPLAND. *Ark. Zool.* 22 (3/4): 279-287, illus. 1969. [From Biol. Abstr. 51(21), 1970.] *WR 140: 125*
[Univ. Lund, Lund, Sweden.]

LeResche, Robert E., and William J. L. Sladen. ESTABLISHMENT OF PAIR AND BREEDING SITE BONDS BY YOUNG KNOWN-AGE ADELIE PENGUINS *(PYGOSCELIS ADELIAE). Animal Behaviour* 18(3): 517-526, [3] figs. + 1 pl. Aug. 1970. *WR 140: 125*
[Johns Hopkins Univ., Baltimore, Md.] Young breeders (3-7 years of age) exhibit only minimal faithfulness to mate and territory. Site of first breeding is likely to be near the site of hatching. Mate at first breeding probably is a matter of chance availability at the time of breeding and is little dependent on previous temporary pairings. Mates of young breeders are probably among the less fit individuals of the population, other youngsters, or older, senescent birds.--From summ.

Leuthold, Walter. SOME BREEDING DATA ON SOMALI OSTRICH. *East African Wildl. J.* 8: 206. Aug. 1970. *WR 140: 126*
[Tsavo Res. Project, P.O. Box 14, Voi, Kenya.]

Ligon, J. David. STILL MORE RESPONSES OF THE POOR-WILL TO LOW TEMPERATURES. *Condor* 72(4): 496-498, 2 figs. Oct. 1970. *WR 140: 126*
[Univ. N. Mex., Albuquerque.] One bird became torpid at weights of 52.8 and 51.3 g when exposed to low ambient temperatures. The poor-wills experienced spontaneous arousal and re-entry into torpor at T_A and T_B well below 15°C. At T_A -12°C a torpid bird without fat reserves quickly reached T_B 0.1°C, was removed and placed at room temperature, and appeared fully recovered 21 hr later.--Courtesy/ Paul A. Stewart.

MacLean, Stephen F., Jr. SOCIAL STIMULATION MODIFIES THE FEEDING BEHAVIOR OF THE AMERICAN ROBIN. *Condor* 72(4): 499-500. Oct. 1970. *WR 140: 126*
[Univ. Ill., Urbana.] In apparent response to the foraging style of cedar waxwings, the robins attempted to hover by a juniper tree and feed on the berries.--Courtesy/ Paul A. Stewart.

Mairy, F. DÉVELOPPEMENTS ANORMAUX DE LA TERRITORIALITÉ ET DE LA NIDIFICATION D'UNE POPULATION DE PINSONS DES ARBRES *(FRINGILLA COELEBS)* SUR LE PLATEAU DES HAUTES FAGNES. [ABNORMAL DEVELOPMENT OF TERRITORIALITY AND NEST-BUILDING IN A POPULATION OF CHAFFINCHES *(FRINGILLA COELEBS)* ON THE HAUTES FAGNES PLATEAU.] *Gerfaut* 59: 48-69. 1969. [From Ibis 112(3), 1970. In French with English summ.] *WR 140: 126*

Manuwal, David A. NOTES ON THE TERRITORIALITY OF HAMMOND'S FLYCATCHER *(EMPIDONAX HAMMONDI)* IN WESTERN MONTANA. *Condor* 72(3): 364-365, 1 fig. July 1970. *WR 140: 126*
[Univ. Calif., Los Angeles.] The territories included tall, dense conifers and dense broadleaf vegetation broken up by numerous canopy openings. Sizes varied from 1.5 to 3.8 acres.--Courtesy/ Paul A. Stewart.

Marler, Peter. A COMPARATIVE APPROACH TO VOCAL LEARNING: SONG DEVELOPMENT IN WHITE-CROWNED SPARROWS. *J. Comp. Physiol. Psychol.* 71(2, pt. 2): 1-25, illus. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 126*
[Rockefeller Univ., New York, N.Y.]

Marshall, B. E., and J. Cooper. OBSERVATIONS ON THE BREEDING BIOLOGY OF THE FISCAL SHRIKE. *Ostrich* 40: 141-149. 1969. [From Auk 87(4), 1970.] *WR 140: 126*
"Lanius collaris."

Martin, Stephen G. THE AGONISTIC BEHAVIOR OF VARIED THRUSHES *(IXOREUS NAEVIUS)* IN WINTER ASSEMBLAGES. *Condor* 72(4): 452-459, 7 figs. Oct. 1970. *WR 140: 126*
[Colo. State Univ., Fort Collins.] At a feeder, varied thrushes dominated all other species except California quail *(Lophortyx californicus)*, scrub jay *(Aphelocoma coerulescens)*, and robin *(Turdus migratorius)*. Varied thrushes initiated most encounters with species other than robins.--Courtesy/ Paul A. Stewart.

McCulloch, Ellen M. SUGGESTED DEFENSE DISPLAY BY BLACK-FACED CUCKOO-SHRIKES. *Emu* 70(2): 86. May 1970. *WR 140: 126*
[6 Bullen Ave., Mitchan, Victoria, Australia.] *"Coracina novaehollandiae."*

Medway, Lord. THE DIURNAL ACTIVITY CYCLE AMONG FOREST BIRDS AT ULU GOMBAK. *Malayan Nature J.* 22: 184-186. 1969. [From Ibis 112(3), 1970.] *WR 140: 126*

Mester, H. STAUBBADEN UND EINEMSEN BEI PIEPERN. [DUST BATHING BY PIPITS.] *J. Ornithol.* 110: 487-492. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 126*

Michael, Edwin D. FREQUENCY OF FEEDING NESTLING PURPLE MARTINS. *Am. Midland Nat.* 84(1): 284-286. July 1970. *WR 140: 127*

[W. Va. Univ., Morgantown.] Abstract: Two families of purple martins *(Progne subis)* were observed to determine how frequently they fed their young. For one nest both male and female shared feeding duties but for the second nest only the male fed the young. All three young from each of the nests reached fledgling stage.

Michael, Edwin D. WING FLASHING IN A BROWN THRASHER AND CATBIRD. *Wilson Bull.* 82(3): 330-331. Sept. 1970. *WR 140: 127*

[W. Va. Univ., Morgantown.] A brown thrasher *(Toxostoma rufum)* and a catbird *(Dumetella carolinensis)* wing flashed in the presence of a buttermilk snake *(Coluber constrictor anthicus)*.--Courtesy/ Paul A. Stewart.

Naik, R. M., and A. Razack. STUDIES ON THE HOUSE SWIFT *APUS AFFINIS* (G. E. GRAY). 7. SEASONAL CHANGES IN DAILY ACTIVITY RHYTHM. *Pavo* 5: 57-74. 1967. [From Ibis 112(2), 1970.] *WR 140: 127*

Naik, R. M., and A. Razack. STUDIES ON THE HOUSE SWIFT *APUS AFFINIS* (G. E. GRAY). 8. BREEDING SEASONS AND THEIR REGULATION. *Pavo* 5: 75-96. 1967. [From Ibis 112(2), 1970.] *WR 140: 127*

Newman, George A. COWBIRD PARASITISM AND NESTING SUCCESS OF LARK SPARROWS IN SOUTHERN OKLAHOMA. *Wilson Bull.* 82(3): 304-309, 3 figs. Sept. 1970. *WR 140: 127*

[Hardin-Simmons Univ., Abilene, Texas.] Of 33 nests of lark sparrows *(Chondestes grammacus)* 45.5% were parasitized by brown-headed cowbirds *(Molothrus ater)*. Of 18 cowbird eggs, 33.4% hatched and 15.8% of the young left the nests. There were 45 lark sparrow eggs in the parasitized nests; 37.8% of the eggs hatched, and 20.0% of the young were fledged.--Courtesy/ Paul A. Stewart.

Oberholzer, A., and B. Tschanz. ZUM JAGEN DER TROTTELLUMME *(URIA AALGE AALGE)* NACH FISCH. [ON THE CATCHING OF FISH BY THE GUILLEMOT *(URIA AALGE AALGE)*.] *J. Ornithol.* 110: 465-470. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 127*

Parkin, D. T., A. W. Ewing, and H. A. Ford. GROUP DIVING IN THE BLUE-FOOTED BOOBY *SULA NEBOUXII*. *Ibis* 112(1): 111-112. Jan. 1970. *WR 140: 127*

[Dept. Zool., West Mains Road, Edinburgh, Scotland.]

Payne, R. B. TEMPORAL PATTERN OF DUETTING IN THE BARBARY SHRIKE *LANIARIUS BARBARUS*. *Ibis* 112(1): 106-108, 1 fig. Jan. 1970. *WR 140: 127*

[Univ. Okla., Norman.]

Payne, R. B., and N. J. Skinner. TEMPORAL PATTERNS OF DUETTING IN AFRICAN BARBETS. *Ibis* 112(2): 173-183, 4 figs. Apr. 1970. *WR 140: 127*

[Univ. Okla., Norman.] Summary: Four species of African barbets *(Lybius torquatus, L. vieilloti, Trachyphonus darnaudii,* and *T. erythrocephalus)* regularly sing in duet. Duets consist of phrases repeated at very regular intervals; in *L. torquatus* and *L. vieilloti* the standard deviation is less than a tenth of the mean interval between duet motifs. Sound spectrographic analysis of the songs indicates that an internal rhythmic behaviour pattern determines in large part the temporal features of the duet in these barbets: (1) one member of a pair of *L. torquatus* continues to call in rhythm even though its mate may call irregularly, (2) in the other three species the calling rhythm of each of the two mates is different, especially in *L. vieilloti* where the ratio of the periodicity of calling of the two birds averages 1:1.52 and where one bird continues to call at the same rate when its mate ceases to call, and (3) several non-duetting African barbets have regular calling periodicities, some with greater precision than in the duetting barbets and some with less. In the barbets the temporal pattern of duets appears to be in greater degree

determined by individual calling rhythms (as in some non-duetting barbets) than by the auditory reaction time involved in a bird responding to its mate. Duetting in barbets probably functions both in maintenance of a pair bond and in territorial advertisement.

Pell, E., and N. L. Hodson. GREAT GREY SHRIKE FEEDING AT AUTUMN ROOST. *British Birds* 63(2): 86. 1970. *WR 140: 128*
[22 Irving Grove, Corby, Northamptonshire, England.] *"Lanius excubitor* and *Acanthis cannabina."*

Perrins, C. M. THE TIMING OF BIRDS' BREEDING SEASONS. *Ibis* 112(2): 242-255, 3 figs. Apr. 1970. *WR 140: 128*
[Edward Grey Inst., High St., Oxford, England.] Summary: Examination of survival rates of nestlings and fledglings of some species show that there is a strong tendency for those young which are hatched earliest in the season to have the greatest chance of surviving to breed. Since natural selection so strongly favours parents who leave many surviving young, the question arises as to why other birds breed later than the date at which they could most successfully raise their young. It is suggested that the food supply for the breeding females immediately prior to the breeding season may limit their ability to form eggs and the females may thus not be able to lay at the time which would result in young being in the nest at the best time for raising them, but as soon after this time as the female is able to produce her eggs. Not all species are likely to be prevented, by food shortage, from breeding at the best time for raising young and the groups of birds most likely to be affected are discussed.

Potter, Eloise F. ANTING IN WILD BIRDS, ITS FREQUENCY AND PROBABLE PURPOSE. *Auk* 87(4): 692-713, 1 fig. Oct. 1970. *WR 140: 128*
[P.O. Box 277, Zebulon, N.C.] Reports anting by one *Colaptes auratus*, five *Cyanocitta cristata*, two *Dumatella carolinensis*, sixteen *Turdus migratorius*, seventeen *Sturnus vulgaris*, one *Passer domesticus*, one *Richmondena cardinalis*, one *Pipilo erythrophthalmus*, and one *Junco hyemalis*. Anting occurred chiefly between dawn and 10:00 a.m. during molting periods.--Courtesy/ Paul A. Stewart.

Radford, A. P. COLOUR PREFERENCES BY HAND-FED ROBIN. *British Birds* 63(8): 342-343. 1970. *WR 140: 128*
[2 Wyck Beck Road, Brentry, Bristol, England.] *"Erithacus rubecula."*

Ricklefs, Robert E. THE NESTING CYCLE OF SONGBIRDS IN TROPICAL AND TEMPERATE REGIONS. *Living Bird* 8: 165-175, illus. 1969. *WR 140: 128*
[Univ. Pa., Philadelphia.] It appears that the great diversity of predators in the tropics has increased the diversity of strategies for reducing mortality rates. Nest construction is more diverse in tropical than in temperate regions, and similar diversity may occur in other anti-predator adaptations. On the other hand, the diversity in the tropical environment apparently has had little effect on time relationships during the nesting period. These are affected more by reduced clutch sizes and increased mortality rates.--From conclusions.

Rossi, J. A. Haedo, and J. G. Esteban. CONSIDERACIONES SOBRE LA REPRODUCCIÓN DE LAS AVES. [CONSIDERATIONS ON REPRODUCTION IN BIRDS.] *Acta Zool. Lilloana* 24: 5-13. 1969. [From Biol. Abstr. 51(21), 1970. In Spanish with English summ.] *WR 140: 128*
[Univ. Nacl. Tucuman, Argentina.]

Rutter, Russell J. GRAY JAYS ACCEPT TRANSFER TO A DIFFERENT NEST IN A NEW LOCATION. *Bird-Banding* 41(2): 130-131. Apr. 1970. *WR 140: 128*
[Huntsville, Ontario, Canada.] The nestling gray jays *(Perisoreus canadensis)* were placed in a nest in a cardboard carton forty-two inches from the nest tree and fifteen feet below the nest.--Courtesy/ Paul A. Stewart.

Schaefer, Ernst. UEBER LEBENSWEISE UND OEKOLOGIE DER IM NATIONALPARK VON RANCHO GRANDE (NORD-VENEZUELA) NACHGEWIESENEN AMEISENVOGELARTEN (FORMICARIIDAE). [THE HABITS AND ECOLOGY OF ANTBIRDS (FORMICARIIDAE) DISCOVERED IN THE NATIONAL PARK OF RANCHO GRANDE (NORTHERN VENEZUELA).] *Bonner Zool. Beitr.* 20(1-3): 99-109. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 129*
[Landesmuseum Naturkunde, Hannover, Germany.]

Schaeffer, Frederick S. OBSERVATION OF "BILLING" IN COURTSHIP BEHAVIOR OF TREE SWALLOW. *Bird-Banding* 41(3): 242. July 1970. *WR 140: 129*
[P.O. Box 3295, Grand Central Station, New York, N.Y.] *"Iridoprocne bicolor."*--Courtesy/ Paul A. Stewart.

Semenov-Tyan-Shanskii, O. I., and A. B. Bragin. [INCUBATION CONDITIONS FOR SOME PRECOCIAL BIRDS IN THE SUBARCTIC.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74: 50-66. 1969. (English translation of Russian paper deposited in Alexander Library, Edward Grey Institute, Oxford, England.) [From Ibis 112(4), 1970. In Russian.] *WR 140: 129*

Skutch, Alexander F. THE DISPLAY OF THE YELLOW-BILLED COTINGA *CARPODECTES ANTONIAE*. *Ibis* 112(1): 115-116. Jan. 1970. *WR 140: 129*
[El Quizarrá, San Isidro del General, Costa Rica.]

Smith, E. Linwood. CACTUS WRENS ATTACK GROUND SQUIRREL. *Condor* 72(3): 363-364. July 1970. *WR 140: 129*
[Univ. Ariz., Tucson.] *"Campylorhynchus brunneicapillus* and *Ammospermophilus harrisii."*--Courtesy/ Paul A. Stewart.

Smith, Susan May. BEHAVIORAL ADAPTATIONS FOR PREDATION IN THE LOGGERHEAD SHRIKE *(LANIUS LUDOVICIANUS L.)*. *Ph.D. thesis, Univ. Wash.* 68 p. 1969. [From Dissertation Abstr. Intern. 30(11B), 1970.] *WR 140: 129*
A study was made of the attack behavior of loggerhead shrikes, and its development within an individual. Both impaling and a precise attack behavior exhibited by this species toward large prey have apparently evolved to overcome the morphological lack of talons, thus allowing shrikes to exploit prey that is too large to be swallowed whole.

Smith, W. John. COURTSHIP AND TERRITORIAL DISPLAYING IN THE VERMILION FLYCATCHER, *PYROCEPHALUS RUBINUS*. *Condor* 72(4): 488-491, 3 figs. Oct. 1970. *WR 140: 129*
[Univ. Pa., Philadelphia.] Courtesy/ Paul A. Stewart.

Smith, W. John. DISPLAYS AND MESSAGE ASSORTMENT IN *SAYORNIS* SPECIES. *Behaviour* 37(1-2): 85-112, 7 figs. 1970. In English with German summ. *WR 140: 129*
[Univ. Pa., Philadelphia.] *"Sayornis nigricans* and *S. Saya."*

Smith, W. John. SONG-LIKE DISPLAYS IN *SAYORNIS* SPECIES. *Behaviour* 37(1-2): 64-84, 3 figs. 1970. In English with German summ. *WR 140: 129*
[Univ. Pa., Philadelphia.] *"Sayornis phoebe, S. nigricans,* and *S. saya."*

Snyder, Noel F. R., and Helen A. Snyder. A COMPARATIVE STUDY OF MOLLUSC PREDATION BY LIMPKINS, EVERGLADE KITES, AND BOAT-TAILED GRACKLES. *Living Bird* 8: 177-223, 39 figs. 1969. *WR 140: 129*
[Univ. South Fla., Tampa.] Summary: A study of the alarm responses of the snail, *Pomacea paludosa*, led to observations on the food habits of three species of birds that prey on this snail in Florida: the Everglade kite *(Rostrhamus sociabilis)*, limpkin *(Aramus guarauna)*, and boat-tailed grackle *(Cassidix mexicanus)*. After discussing the diet of each species, the authors describe foraging behaviors and the methods by which the birds deal with their food: how they open mussels and how they get past the opercula and shells of snails. They describe the asymmetry in the bills of limpkins, consider the

question of its development and use in dealing with molluscs, and compare it with asymmetry in the bills of other mollusc-eating species such as the Asian open-billed stork *(Anastomus oscitans)* and the oystercatchers *(Haematopus)*. Since in some regions limpkins, everglade kites, and boat-tailed grackles all prey heavily on *Pomacea paludosa*, the authors consider interactions between these species and the position of each in the habitat.

Stiles, F. Gary, and Larry L. Wolf. HUMMINGBIRD TERRITORIALITY AT A TROPICAL FLOWERING TREE. *Auk* 87(3): 467-491, 6 figs. July 1970. *WR 140: 130*
[Univ. Calif., Los Angeles.] *"Amazilia rutila, A. saucerottei,* and *Phaeochroa cuvierii."*--Courtesy/ Paul A. Stewart.

Sturman, William Allen. THE RESPONSES OF THE CHESTNUT-BACKED CHICKADEE, *PARUS RUFESCENS*, TO A LATITUDINAL VEGETATION GRADIENT. *Ph.D. thesis, Univ. Wash.* 105 p. 1969. [From Dissertation Abstr. Intern. 30(11B), 1970.] *WR 140: 130*
Habitat occupancy and foraging behavior were investigated in order to study species responses to latitudinal gradient.

Svensson, S. [STUDIES ON THE BREEDING BIOLOGY OF THE SAND MARTIN *RIPARIA RIPARIA* IN A COLONY IN SOUTHERN LAPLAND 1968.] *Vår Fågelvärld* 28: 236-240. 1969. [From Auk 87(3), 1970. In Swedish with English summ.] *WR 140: 130*

Swainson, G. W. CO-OPERATIVE REARING IN THE BELL MINER. *Emu* 70(4): 183-188, 1 fig. Oct. 1970. *WR 140: 130*
[2 Ramsay Street, Bayswater, Australia.] A bell miner colony consists of distinct groups, each of which is probably a family originating from one mated pair. Growth and behavior during the post-fledging period are described. Begging behavior is subdued; there is no wing-fluttering. The food is mainly scale insects. Young are fed at a high rate, both by members of their own group and by neighboring birds without young.--From summ.

Tast, Johan. GROUP NESTING AND THE BREEDING SEASON OF THE LINNET *CARDUELIS CANNABINA* IN FINLAND. *Ornis Fennica* 47(2): 74-82, 1 fig. 1970. In English with Finnish summ. *WR 140: 130*
[Helsinki Univ., Helsinki, Finland.] Linnets *Carduelis cannabina* breed in small loose groups, which in Finland usually consist of less than ten pairs. The breeding seasons of linnets is longer than that of almost all of our regularly breeding passerine bird species, about 90 days, extending from mid-April to early September. Two clutches are hatched each year.--From summ.

Taylor, Walter Kingsley, and Hugh Hanson. OBSERVATIONS ON THE BREEDING BIOLOGY OF THE VERMILION FLYCATCHER IN ARIZONA. *Wilson Bull.* 82(3): 315-319. Sept. 1970. *WR 140: 130*
[Fla. Tech. Univ., Orlando.] Discusses hostile behavior, voice, and nesting biology of *Pyrocephalus rubinus*.--Courtesy/ Paul A. Stewart.

Thielcke, G. DIE REAKTION VON TANNEN- UND KOHLMEISE *(PARUS ATER, P. MAJOR)* AUF DEN GESANG NAHVERWANDTER FORMEN. [THE REACTION OF COAL TITMOUSE AND THE GREAT TITMOUSE *(PARUS ATER* AND *P. MAJOR)* TO THE SONGS OF RELATED SPECIES.] *J. Ornithol.* 110: 148-157. 1969. [From Auk 87(4), 1970. In German with English summ.] *WR 140: 130*

Thiollay, J.-M. RECHERCHES ECOLOGIQUES DANS LA SAVANE DE LAMTO (COTE D'IVOIRE): LE PEUPLEMENT AVIEN. ESSAI D'ETUDE QUANTITATIVE. [ECOLOGICAL RESEARCH IN THE LAMTO SAVANNA (IVORY COAST): THE AVIFAUNA. QUANTITATIVE SAMPLING STUDY.] *Terre & Vie* 24(1): 108-144, 4 figs. Jan.-Mar. 1970. In French with English summ. *WR 140: 130*
[École Normale Supérieure, 24 rue Lhomond, Paris, France.] Habitat preferences, diet, breeding periodicity, and fecundity of 263 spp. of birds.

XUM

Thoresen, A. C. OBSERVATIONS ON THE BREEDING BEHAVIOUR OF THE DIVING PETREL *PELECANOIDES U. URINATRIX* (GMELIN). *Notornis* 16: 241-260. 1969. [From Auk 87(4), 1970.] *WR 140: 131*

Tinning, P. C., and P. A. Tinning. HOODED CROWS ROBBING MERLIN OF PREY. *British Birds* 63(2): 83. 1970. *WR 140: 131*
[65 Perry Hill, Catford, London, England.]

Verbeek, Nicolaas A. M. BREEDING ECOLOGY OF THE WATER PIPIT. *Auk* 87(3): 425-451, 6 figs. July 1970. *WR 140: 131*
[Univ. Calif., Berkeley.] The following are discussed: spring arrival, habitat, nest site selection, territory, display of male, nests, eggs, temperature as related to the onset of breeding, incubation, nestling stage, fledglings, breeding success, food, postbreeding period, and the breeding cycle relative to the alpine environment of *Anthus spinoletta*.--Courtesy/ Paul A. Stewart.

Vermeer, Kees. ARRIVAL AND CLUTCH INITIATION OF DOUBLE-CRESTED CORMORANTS AT LAKE NEWELL, ALBERTA. *Blue Jay* 28(3): 124-125, 1 fig. Sept. 1970. *WR 140: 131*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.]

Verner, J., and M. F. Willson. MATING SYSTEMS, SEXUAL DIMORPHISM, AND THE ROLE OF MALE NORTH AMERICAN PASSERINE BIRDS IN THE NESTING CYCLE. *Am. Ornithol. Union: Ornithol. Monographs* no. 9. 76 p. 1969. [From Ibis 112(3), 1970.] *WR 140: 131*

Verner, Jared, and Gay H. Engelsen. TERRITORIES, MULTIPLE NEST BUILDING, AND POLYGYNY IN THE LONG-BILLED MARSH WREN. *Auk* 87(3): 557-567. July 1970. *WR 140: 131*
[Central Wash. State Coll., Ellensburg.] Long-billed marsh wrens *(Telmatodytes palustris)* were polygynous despite the fact that there was a 1:1 sex ratio. Females may select their mates on the basis of food availability.--Courtesy/ Paul A. Stewart.

Voisin, René. NEUF JOURS AU NID DU CHOCARD À BEC JAUNE *PYRRHOCORRAX GRACULUS*. [NINE DAYS AT THE NEST OF THE YELLOW-BILLED CHOUGH, *PYRRHOCORRAX GRACULUS*.] *Nos Oiseaux* 29(320): 286-292. 1968. [From Biol. Abstr. 51(19), 1970. In French.] *WR 140: 131*
[Closillon 30, Monthey, Switzerland.]

Von Haartman, Lars. THE NESTING HABITS OF FINNISH BIRDS: I. PASSERIFORMES. *Commentat. Biol. Soc. Sci. Fenn.* 32: 7-187. 1969. [From Biol. Abstr. 51(21), 1970.] *WR 140: 131*

Wallace, Robert Ardell. SEXUAL DIMORPHISM, NICHE UTILIZATION, AND SOCIAL BEHAVIOR IN INSULAR SPECIES OF WOODPECKERS. *Ph.D. thesis, Univ. Texas/Austin.* 104 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 131*
"Centurus striatus, C. radiolatus, C. aurifrons, C. carolinus, and *Melanerpes portoricensis."*

Watson, John R. DOMINANCE-SUBORDINATION IN CAGED GROUPS OF HOUSE SPARROWS. *Wilson Bull.* 82(3): 268-278, 2 figs. Sept. 1970. *WR 140: 131*
[Univ. Wis., Manitowoc.] In each group of 2-8 house sparrows *(Passer domesticus)* a highly combative male won most contests, but a linear hierarchy was blocked by site-related dominance. Adult females rarely fought among themselves and were largely free from adult male aggression. First-year birds were treated as adult females by adults of both sexes.--Courtesy/ Paul A. Stewart.

White, Sheila J., R. E. C. White, and W. H. Thorpe. ACOUSTIC BASIS FOR INDIVIDUAL RECOGNITION BY VOICE IN THE GANNET. *Nature* 225(5238): 1156-1158, 4 figs. 21 Mar. 1970. *WR 140: 132*
[Univ. Cambridge, Cambridge, England.] *"Sula bassana."*

White, Sheila J., and R. E. C. White. INDIVIDUAL VOICE PRODUCTION IN GANNETS. *Behaviour* 37(1-2): 40-54, 3 figs. 1970. In English with French summ. *WR 140: 132*
[Cambridge Univ., Cambridge, England.] *"Sula bassana."*

BIRDS--MIGRATION & BANDING REPORTS

Aubert, Jacques. LE BAGUEMENT DE MIGRATEURS EN OCTOBRE 1967 AU COL DE BRETOLET. [THE CAPTURING OF MIGRATORY BIRDS IN OCTOBER 1967 AT COL DE BRETOLET.] *Nos Oiseaux Bull. Soc. Romande Etude Protect Oiseaux* 29(317/318): 221-224. 1968. [From Biol. Abstr. 51(18), 1970. In French.] *WR 140: 132*
[Mus. Zool., Lausanne, Switzerland.]

Austin, George T. MIGRATION OF WARBLERS IN SOUTHERN NEVADA. *Southwestern Nat.* 15(2): 231-237, 1 fig. 15 Oct. 1970. *WR 140: 132*
[Univ. Ariz., Tucson.] Abstract: Migration of wood warblers was examined in southern Nevada. Definite patterns are evident with spring migration concentrated in the lowlands and fall migration in the lowlands and mountains with some species present in one but not the other. Lowland fall migration occurs after the late summer heat. It is suggested that some species are incapable of withstanding the extreme heat of the desert in early fall.

Bagg, Aaron M. A SUMMARY OF THE 1969 FALL MIGRATION SEASON, WITH SPECIAL ATTENTION TO ERUPTIONS OF VARIOUS BOREAL AND MONTANE SPECIES AND AN ANALYSIS OF CORRELATIONS BETWEEN WIND FLOWS AND MIGRATION. *Audubon Field Notes* 24(1): 4-13, 13 figs. Feb. 1970. *WR 140: 132*

Busse, Przemyslaw, and Maciej Gromadzki. AKCJA BALTYCKA 1967: SPRAWOZDANIE Z OBRACZKOWANIA PTAKOW. [OPERATION BALTIC 1967: BIRD RINGING REPORT.] *Acta Ornithol.* 11(9): 329-354. 1969. [From Biol. Abstr. 51(22), 1970. In Polish with Russian and English summ.] *WR 140: 132*
[Polish Akad. Nauk, Inst. Zool., Warsaw, Poland.]

Busse, Przemyslaw, and Maciej Gromadzki. AKCJA BALTYCKA 1968: SPRAWOZDANIE Z OBRACZKOWANIA PTAKOW. [OPERATION BALTIC 1968: BIRD RINGING REPORT.] *Acta Ornithol.* 12(1): 1-24, illus. 1970. [From Biol. Abstr. 51(20), 1970. In Polish with Russian and English summ.] *WR 140: 132*
[Polish Akad. Nauk, Inst. Zool., Warsaw, Poland.]

Czaja-Topinska, Joanna. MIGRATION DYNAMICS AND CHANGES IN FAT DEPOSITION IN THE GREAT TIT, *PARUS MAJOR* L. *Acta Ornithol.* 11(10): 357-378, illus. 1969. [From Biol. Abstr. 51(22), 1970. In English with Polish and Russian summ.] *WR 140: 132*

De Smet, W. M. A. STUDIE OVER DE TREK VAN DE KOEKOEK *CUCULUS CANORUS* L.: I. BESCHOUWINGEN OVER DE WAARDE VAN DE AANKOMSTDATA. [STUDY ON THE MIGRATION OF THE CUCKOO *CUCULUS CANORUS* L.: I. CONSIDERATIONS ON THE VALUE OF ARRIVAL DATA.] *Gerfaut* 57(1): 50-76. 1967. [From Biol. Abstr. 51(21), 1970. In Dutch with French and Portuguese summ.] *WR 140: 132*
[Kon. Belg. Inst. Natuurwetensch., Brussels, Belgium.]

Dittberner, Hartmut, Winfried Dittberner, and Michael Lenz. DURCHZUGS UND WINTERFESTSTELLUNGEN NORDISCHER AMMERNARTEN IM LAND BRANDENBURG. [A RECORDING OF WINTERING AND MIGRATION REPORTS OF NORTHERN BUNTING SPECIES IN THE PROVINCE OF BRANDENBURG, GERMANY.] *Vogelwelt* 90(6): 225-233, illus. 1969. [From Biol. Abstr. 51(15), 1970. In German with English summ.] *WR 140: 133*
[Assmannstrasse IC, Berlin, Germany.]

Eisenmann, E., and F. Haverschmidt. NORTHWARD MIGRATION TO SURINAM OF SOUTH AMERICAN MARTINS *(PROGNE)*. *Condor* 72(3): 368-369. July 1970. *WR 140: 133*
[Am. Mus. Nat. Hist., New York, N.Y.] *"Progne chalybea chalybea."*--Courtesy/ Paul A. Stewart.

Elliott, C. C. H., and M. J. F. Jarvis. FOURTEENTH RINGING REPORT. *Ostrich* 41(1/2): 1-117. 1970. [From Biol. Abstr. 51(24), 1970.] *WR 140: 133*
[Univ. Cape Town, Cape Town, South Africa.]

Ely, Charles A. MIGRATION OF LEAST AND TRAILL'S FLYCATCHERS IN WEST-CENTRAL KANSAS. *Bird-Banding* 41(3): 198-204. July 1970. *WR 140: 133*
[Fort Hays Kans. State Coll., Hays.] Fall migration of the least flycatcher *(Empidonax minimus)* was gradual from mid-July to late September, with the adults preceding the immatures. Spring migration extended through most of May. Fall migration of the Traill's flycatcher *(E. traillii)* extended from late July to mid-September, with a minor peak in mid-August. Spring migration covered the period from mid-May to mid-June.--Courtesy/ Paul A. Stewart.

Emlen, Stephen T. THE DEVELOPMENT OF MIGRATORY ORIENTATION IN YOUNG INDIGO BUNTINGS. *Living Bird* 8: 113-126, 7 figs. 1969. *WR 140: 133*
[Cornell Univ., Ithaca, N.Y.]

Evans, P. R. TIMING MECHANISMS AND THE PHYSIOLOGY OF BIRD MIGRATION. *Sci. Prog.* 58(230): 263-275. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 133*
[Duke Univ., Durham, N.C.]

Gauthreaux, S. A., Jr., and K. P. Able. WIND AND THE DIRECTION OF NOCTURNAL SONGBIRD MIGRATION. *Nature* 228(5270): 476-477, 3 figs. 31 Oct. 1970. *WR 140: 133*
[Clemson Univ., Clemson, S.C.]

Gehring, Walter. RADARBEOBACHTUNGEN UEBER DEN VOGELZUG AM COL DE BRETOLET IN DEN WALLISER ALPEN. [RADAR OBSERVATIONS ON THE MIGRATION NEAR COL DE BRETOLET IN THE ALPS OF VALAIS.] *Ornithol. Beob.* 64(5/6): 133-144, illus. 1967. [From Biol. Abstr. 51(16), 1970. In German with English summ.] *WR 140: 133*
[Univ. Zurich, Zurich, Switzerland.]

Johansen, Hans. NORDAMERIKANISCHE ZUGVOEGEL IN DER SUEDHAELFTE SUEDAMERIKAS. [NORTH AMERICAN MIGRANT BIRDS IN THE SOUTHERN HALF OF SOUTH AMERICA.] *Bonner Zool. Beitr.* 20(1-3): 182-190. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 133*
[Skovsvinget 8, Lyngby, Denmark.]

Johnson, Ned K. FALL MIGRATION AND WINTER DISTRIBUTION OF THE HAMMOND FLYCATCHER. *Bird-Banding* 41(3): 169-190, 5 figs. July 1970. *WR 140: 133*
[Univ. Calif., Berkeley.] Based on an examination of museum specimens, the time of migration through various locations in the southwestern United States is given for *Empidonax hammondii*.--Courtesy/ Paul A. Stewart.

Keeton, William T. "DISTANCE EFFECT" IN PIGEON ORIENTATION: AN EVALUATION. *Biol. Bull.* 139(3): 510-519, 5 figs. Dec. 1970. *WR 140: 133*
[Cornell Univ., Ithaca, N.Y.]

Kiepenheuer, J., and K. E. Linsenmair. VOGELZUG AN DER NORDAFRIKANISCHEN KÜSTE VON TUNESIEN BIS ROTES MEER. [MIGRATION ALONG THE NORTH AFRICAN COAST FROM TUNISIA TO THE RED SEA.] *Vogelwarte* 23: 80-94. 1965. [From Ibis 112 (3), 1970. In German with English summ.] *WR 140: 134*

Kistyakovskii, A. B., and others. [AVIAN ORIENTATION.] *Priroda* 1970(1): 56-61. 1970. [From Bird-Banding 41(3), 1970. In Russian.] *WR 140: 134*

Martin, P. W., and M. T. Myres. OBSERVATIONS ON THE DISTRIBUTION AND MIGRATION OF SOME SEABIRDS OFF THE OUTER COASTS OF BRITISH COLUMBIA AND WASHINGTON STATE, 1946-1949. *Syesis* 2(1/2): 241-256, illus. 1969. [From Biol. Abstr. 51(22), 1970.] *WR 140: 134*
[P.O. Box 37, Chipata, Zambia.]

Medway, Lord. A RINGING STUDY OF THE MIGRATORY BROWN SHRIKE IN WEST MALAYSIA. *Ibis* 112(2): 184-198, 6 figs. Apr. 1970. *WR 140: 134*
[Univ. Malaya, Pantai Valley, Kuala Lumpur, Malaysia.] Wintering brown shrikes frequent open lowland country, a habitat that is largely man-made in Malaya. Individuals are sedentary during the winter season, each occupying a restricted area and exhibiting territorial behavior. The earliest observations each year in different parts of Southeast Asia indicate that the southward migratory journey is relatively rapid. Shrikes netted in September-October comprised 29% adults, 54% full grown (i.e. immatures plus poorly-characterized adults), and 17% juveniles. The mean weight of September birds was lower than any other month except November. The proportion of returns after one year was 11%, and after two years 1% only. Most returning birds were present in the netting area during the latter part of the winter of initial ringing; it is suggested tentatively that imprinting of the wintering grounds may occur during this period.--From summ.

Moreau, R. E. CHANGES IN AFRICA AS A WINTERING AREA FOR PALAEARCTIC BIRDS. *Bird Study* 17(2): 95-103. June 1970. *WR 140: 134*
[Curlews, Sutton St. Nicholas, Hereford, England.] The changes in habitat have had little effect on migrating species; most of them depend on more or less open country.

Nisbet, I. C. T., and W. H. Drury, Jr. SHORT-TERM EFFECTS OF WEATHER ON BIRD MIGRATION: A FIELD STUDY USING MULTIVARIATE STATISTICS. *Animal Behaviour* 16: 496-530. 1968. [From Bird-Banding 41(2), 1970.] *WR 140: 134*

Nisbet, Ian C. T. AUTUMN MIGRATION OF THE BLACKPOLL WARBLER: EVIDENCE FOR LONG FLIGHT PROVIDED BY REGIONAL SURVEY. *Bird-Banding* 41(3): 207-240, 3 figs. July 1970. *WR 140: 134*
[Mass. Audubon Soc., Lincoln.] Most *Dendroica striata* appear to fly directly from the northeastern U.S. towards their wintering grounds in northern South America.--From summ. Courtesy/ Paul A. Stewart.

Owen, D. F. THE MIGRATION OF THE YELLOW WAGTAIL FROM THE EQUATOR. *Ardea* 57(1/2): 77-85. 1969. [From Bird-Banding 41(3), 1970.] *WR 140: 134*

Rendahl, H. DIE ZUGVERHÄLTNISSE DER SCHWEDISCHEN BUCKFINKEN *(FRINGILLA C. COELEBS L.)*. MIT BERÜCKSICHTIGUNG DER ERGEBNISSE DER NORWEGISCHEN UND FINNISCHEN BERINGUNGEN. [THE MIGRATION OF SWEDISH CHAFFINCH *(FRINGILLA COELEBS)* WITH THE RESULTS OF NORWEGIAN AND FINNISH BANDING.] *Ark. Zool.* 22: 225-278. 1969. [From Ibis 112(3), 1970. In German.] *WR 140: 134*

Robbins, Sam. EXTREME ARRIVAL AND DEPARTURE DATES. *Passenger Pigeon* 32 (3): 83-137. Fall 1970. *WR 140: 134*
A listing by species of dates for Wisconsin birds based on records for the period 1914-69.

Schüz, E., and W. Meise. ZUM BEGRIFF DES TEILZIEHERS. [ON THE CONCEPT OF PARTIAL MIGRATION.] *Vogelwarte* 24: 213-217. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 135*

Sharrock, J. T. R. SCARCE MIGRANTS IN BRITAIN AND IRELAND DURING 1958-67 / PART 4 / BLUETHROAT AND ORTOLAN BUNTING. *British Birds* 63(8): 313-324, 11 figs. 1970. *WR 140: 135*
[59 Curlew Crescent, Bedford, England.] *"Luscinia svecica* and *Emberiza hortulana."*

Spencer, Robert. THE ROLE OF BIRD-RINGING IN CONSERVATION. *Bird Study* 17 (2): 104-110. June 1970. *WR 140: 135*
"In addition to indicating the scale of the disaster the rings may also provide the most detailed evidence concerning the area affected....Perhaps the most important achievement of ringing in the field of conservation has been to demonstrate the futility of promoting measures only on a national basis...with half the peoples hunting species which the other half are attempting to conserve."

Von Blotzheim, N. Glutz. HOECHSTALTER SCHWEIZERISCHER RINGVOEGEL: II. NACHTRAG. [THE OLDEST SWISS BANDED BIRDS: II. SUPPLEMENT.] *Ornithol. Beob.* 64(5/6): 198-202. 1967. [From Biol. Abstr. 51(19), 1970. In German.] *WR 140: 135*

Wilks, K. A. [SOME IDEAS ON AVIAN ORIENTATION.] *Bioniki & Biokibernetika* 1968: 213-218. 1968. [From Bird-Banding 41(3), 1970. In Russian.] *WR 140: 135*

Zink, G. DIE WIEDERFUNDE IN DEUTSCHLAND BERINGTER SEIDENSCHWANZE *(BOMBYCILLA GARRULUS)* DER INVASION 1965/66. [BANDED BOHEMIAN WAXWINGS *(BOMBYCILLA GARRULUS)* OF THE INVASION OF 1965/66 WHICH WERE FOUND AGAIN.] *Bonner Zool. Beitr.* 20 (1-3): 191-199. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 135*
[Vogelwarte Radolfzell, Schloss Moggingen, Germany.]

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Amerson, A. Binion, Jr. ORNITHOLOGY OF THE MARSHALL AND GILBERT ISLANDS. *Atoll Res. Bull.* 127: 1-348. 1969. [From Biol. Abstr. 51(16), 1970.] *WR 140: 135*
[Pac. Ocean Biol. Serv. Program, Smithson. Inst., Washington, D.C.]

Anderson, Stanley H. THE AVIFAUNAL COMPOSITION OF OREGON WHITE OAK STANDS. *Condor* 72(4): 417-423, 1 fig. Oct. 1970. *WR 140: 135*
[Kenyon Coll., Gambier, Ohio.] Five white oak stands in the western Willamette Valley were censused between Jan.-Dec. 1967. During the winter, seed eaters were present in large numbers. The proportion of seed eaters decreased during late spring and summer due to the influx of insect eaters.--Courtesy/ Paul A. Stewart.

Austin, George T. BREEDING BIRDS OF DESERT RIPARIAN HABITAT IN SOUTHERN NEVADA. *Condor* 72(4): 431-436, 3 figs. Oct. 1970. *WR 140: 135*
[Univ. Ariz., Tucson.] Courtesy/ Paul A. Stewart.

Balda, Russell P. EFFECTS OF SPRING LEAF-FALL ON COMPOSITION AND DENSITY OF BREEDING BIRDS IN TWO SOUTHERN ARIZONA WOODLANDS. *Condor* 72(3): 325-331, 2 figs. July 1970. *WR 140: 135*
[Northern Ariz. Univ., Flagstaff.] Loss of tree foliage restricted the success of foliage nesting birds in the oak woodland. Higher densities of birds nested in sites other than tree foliage. The oak-juniper-pine woodland attracted fewer species of foliage nesters but supported a higher over-all density.--Courtesy/ Paul A. Stewart.

Bauer, Kurt M., and Urs N. Glutz von Blotzheim. HANDBUCH DER VÖGEL MITTEL-EUROPAS / BAND 1. GAVIIFORMES-PHOENICOPTERIFORMES. [HANDBOOK OF THE BIRDS OF CENTRAL EUROPE. VOLUME 1. GAVIIFORMES-PHOENICOPTERIFORMES.] *Akademische Verlagsgesellschaft* (Frankfurt/ Main). 483 p., 70 figs., 6.25 x 9.25 in. 1966. In German. Price DM 48. *WR 140: 136*

Descriptive accounts for species of the following families: Gaviidae, Podicipitidae, Diomedeidae, Procellariidae, Hydrobatidae, Pelecanidae, Sulidae, Phalacrocoracidae, Ardeidae, Ciconiidae, Plataleidae, and Phoenicopteridae.

Bauer, Kurt M., and Urs N. Glutz von Blotzheim. HANDBUCH DER VÖGEL MITTEL-EUROPAS / BAND 2. ANSERIFORMES (1. TEIL). [HANDBOOK OF THE BIRDS OF CENTRAL EUROPE. VOLUME 2. ANSERIFORMES (1st PART).] *Akademische Verlagsgesellschaft* (Frankfurt/ Main). 555 p., 76 figs. + 5 color pls., 6.25 x 9.25 in. 1968. In German. Price DM 57. *WR 140: 136*

Descriptive accounts for species of the following genera: *Cygnus, Anser, Branta, Alopochen, Tadorna,* and *Anas.*

Bauer, Kurt M., and Urs N. Glutz von Blotzheim. HANDBUCH DER VÖGEL MITTEL-EUROPAS / BAND 3. ANSERIFORMES (2. TEIL). [HANDBOOK OF THE BIRDS OF CENTRAL EUROPE. VOLUME 3. ANSERIFORMES (2nd PART).] *Akademische Verlagsgesellschaft* (Frankfurt/ Main). 504 p., 78 figs. + 1 color pl., 6.25 x 9.25 in. 1969. In German. Price DM 57. *WR 140: 136*

Descriptive accounts for species of the following genera: *Netta, Aythya, Somateria, Polysticta, Histrionicus, Clangula, Melanitta, Bucephala, Mergus,* and *Oxyura.*

Bell, H. L. ADDITIONS TO THE AVIFAUNA OF GOODENOUGH ISLAND, PAPUA. *Emu* 70(4): 179-182, 1 fig. Oct. 1970. *WR 140: 136*

[PNG Military Cadet School, Lae, Territory Papua & New Guinea.] A complete list of the avifauna is given.

Bell, H. L. FIELD NOTES ON BIRDS OF THE NOMAD RIVER SUB-DISTRICT, PAPUA. *Emu* 70(3): 97-104, 1 fig. July 1970. *WR 140: 136*

[PNG Military Cadet School, Lae, Territory Papua & New Guinea.] Annotated list of 133 spp.

Benson, C. W., R. K. Brooke, R. J. Dowsett, and M. P. Stuart Irwin. NOTES ON THE BIRDS OF ZAMBIA: PART V. *Arnoldia* 4(40): 1-59. 10 July 1970. *WR 140: 136*

[Univ. Mus. Zool., Cambridge, England.]

Borovitskaya, G. K. [A QUANTITATIVE CHARACTERIZATION OF THE BIRD POPULATION OF OPEN LANDSCAPES OF THE MOUNTAIN FOREST-STEPPE OF THE BURYAT ASSR.] *Uch. Zap. Buryat. Gos. Pedagog. Inst.* 31: 18-22. 1968. [From Biol. Abstr. 51(24), 1970, from Referat. Zhur., Biol., 1970, no. 31351. In Russian.] *WR 140: 136*

Braaksma, S., A. Timmerman, E. P. Klever, and W. P. Ten Klooster. DE AVIFAUNA VAN HET EEMS-DOLLARDGEBIED. [AVIFAUNA OF THE EEMS-DOLLARD AREA.] *Limosa* 42(3-4): 156-177, 1 fig. 1969. In Dutch with English summ. *WR 140: 136*

Bravery, J. A. THE BIRDS OF ATHERTON SHIRE, QUEENSLAND. *Emu* 70(2): 49-63, 1 fig. May 1970. *WR 140: 136*

[Box 178, Atherton, North Queensland, Australia.] Annotated list of 314 spp.

Bundy, G., and J. H. Morgan. NOTES ON TRIPOLITANIAN BIRDS. *Bull. British Ornithol. Club* 89: 139-144. 1969. [From Auk 87(4), 1970.] *WR 140: 136*

Bundy, G., and J. H. Morgan. NOTES ON TRIPOLITANIAN BIRDS (PART 2). *Bull. British Ornithol. Club* 89: 151-159. 1969. [From Auk 87(4), 1970.] *WR 140: 136*

Clark, Clarence F., and James P. Sipe. BIRDS OF THE LAKE ST. MARYS AREA / AN ANNOTATED CHECK LIST AND MIGRATION DATES. *Ohio Dept. Nat. Resources Publ.* 350. iv + 93 p., illus. [1970.] *WR 140: 137*
[Ohio State Univ., Columbus.] Annotated listing of 295 spp. Residents and visitors are given in tables.

Cody, Martin L. CHILEAN BIRD DISTRIBUTION. *Ecology* 51(3): 455-464, 4 figs. Late Spring 1970. *WR 140: 137*
[Univ. Calif., Los Angeles.] Species diversity within habitats is greater in Chile than in North America or Australia. Most Chilean species occupy limited geographic ranges within which they utilize a greater variety of habitats than their north temperate counterparts.--Courtesy/ Paul A. Stewart.

Constant, P., and R. Maheo. L'AVIFAUNE NICHEUSE D'UNE LANDE XEROPHILE DE BRETAGNE. [BREEDING BIRD FAUNA OF A XEROPHILIC HEATH IN BRITTANY.] *Terre & Vie* 1970(3): 346-355, 3 figs. July-Sept. 1970. In French. *WR 140: 137*

Dickinson, E. C. NOTES UPON A COLLECTION OF BIRDS FROM INDOCHINA. *Ibis* 112(4): 481-487. Oct. 1970. *WR 140: 137*
[c/o Pronesiam, Inc., P.O. Box 326, Bangkok, Thailand.] Annotated list of 22 spp.

Dillon, S. T. SOME OBSERVATIONS CONCERNING AVIAN HABITAT PREFERENCES. *Audubon Bull. Ill. Audubon Soc.* no. 155. p. 1-8, 1 fig. Sept. 1970. *WR 140: 137*
Three census units (river bottom, central upland, and farmland) existing in the 1,360 acres of the Max McGraw Wildlife Foundation are described and discussed. The preferences of avian species to vegetational habitat are tabulated for 125 spp.

Ferry, C., and B. Frochet. L'AVIFAUNE NIDIFICATRICE D'UNE FORÊT DE CHÊNES PEDONCULES EN BOURGOGNE: ÉTUDE DE DEUX SUCCESSIONS ÉCOLOGIQUES. [THE BREEDING BIRD FAUNA OF A *QUERCUS PEDUNCULATA* FOREST IN BURGUNDY: A STUDY OF TWO TYPES OF ECOLOGICAL SUCCESSIONS.] *Terre & Vie* 1970(2): 153-250, 17 figs. Apr.-June 1970. In French with English summ. *WR 140: 137*
[Centre d'Études Ornithol. de Bourgogne, Dijon, France.]

Fiala, Kent L. THE BIRDS OF GAGE COUNTY, NEBRASKA. *Nebr. Bird Rev.* 38(3): 43-70. Sept. 1970. *WR 140: 137*
An annotated check list of 277 spp. recorded in Gage County since the 1890's.

Fink, Louis C. BIRDS IN DOWNTOWN ATLANTA--1969. *Oriole* 35(1): 1-9, 2 figs. Mar. 1970. *WR 140: 137*
[Apt. 913, 620 Peachtree St., N.E., Atlanta, Ga.] Annotated list of 59 spp. found in downtown Atlanta near two newly-constructed tall buildings. One 32-story building is dark and unlit at night, the other 26-story building is white and floodlit. A nearby park attracted many of the migrants and residents. During September, October, and November of 1969, several hundred birds were collected from surrounding sidewalks and streets, or were picked up in a dazed condition. Birds may have been attracted by the lights and insects.

Forbes-Watson, A. D. NOTES ON BIRDS OBSERVED IN THE COMOROS ON BEHALF OF THE SMITHSONIAN INSTITUTION. *Atoll Res. Bull.* no. 128. 23 p. 1969. [From Auk 87(3), 1970.] *WR 140: 137*

Friedmann, H., and J. G. Williams. THE BIRDS OF THE SANGO BAY FORESTS, BUDDU COUNTY, MASAKA DISTRICT, UGANDA. *Los Angeles County Mus. Contrib. Sci.* no. 162. 48 p. 1969. [From Auk 87(4), 1970.] *WR 140: 137*

Genelly, R. E. BIRDS OF THE MOLD GAME RESERVE, GHANA. *Nigerian Field* 34: 171-182. 1969. [From Auk 87(3), 1970.] *WR 140: 137*

Gill, Frank B., Christian Jouanin, and Robert W. Storer. NOTES ON THE SEABIRDS OF ROUND ISLAND, MAURITIUS. *Auk* 87(3): 514-521, 5 figs. July 1970. *WR 140: 138*

[Acad. Nat. Sci., Philadelphia, Pa.] The biology, ecology, and population status of *Pterodroma arminjoniana* and notes on several other species.--Courtesy/ Paul A. Stewart.

Gill, H. B. BIRDS OF INNISFAIL AND HINTERLAND. *Emu* 70(3): 105-116, 1 fig. July 1970. *WR 140: 138*

[M/S 216, Innisfail, Australia.] Annotated list of 298 native and 6 introduced species.

Hadley, N. F. MICROENVIRONMENTAL FACTORS INFLUENCING THE NESTING SITES OF SOME SUBALPINE FRINGILLID BIRDS IN COLORADO. *Arctic & Alpine Res.* 1: 121-126. 1969. [From Auk 87(3), 1970.] *WR 140: 138*

Hainard, Robert. A PROPOS DES OISEAUX D'UNE PAROI DE ROCHERS EN VALAIS. [CONCERNING THE BIRDS ON AN INNER SURFACE OF THE CRAGS OF VALAIS.] *Nos Oiseaux* 29(320): 281-285, illus. 1968. [From Biol. Abstr. 51(19), 1970. In French.] *WR 140: 138*

[1233 Bernex, Geneva, Switzerland.]

Heitkamp, U., and K. Hinsch. DIE SIEDLUNGSDICHTE DER BRUTVÖGEL IN DEN AUSSENBEZIRKEN DER STADT GÖTTINGEN 1966. [THE BREEDING DENSITY OF BIRDS IN THE OUTSKIRTS OF GÖTTINGEN IN 1966.] *Vogelwelt* 90: 161-177. 1969. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 138*

With comparative data for 1965.

Heron, S. J. THE BIRDS OF MIDDLE SWAN, WESTERN AUSTRALIA. *Emu* 70(4): 155-158, 1 fig. Oct. 1970. *WR 140: 138*

[De La Salle Coll., Orange, Australia.] Annotated list of 81 spp.

Hogstad, O. BREEDING BIRD POPULATIONS IN TWO SUBALPINE HABITATS IN THE MIDDLE OF NORWAY DURING THE YEARS 1966-68. *Nytt Mag. Zool.* 17: 81-91. 1969. [From Ibis 112(4), 1970.] *WR 140: 138*

Hughes, R. A. NOTES ON THE BIRDS OF THE MOLLENDO DISTRICT, SOUTHWEST PERU. *Ibis* 112(2): 229-241. Apr. 1970. *WR 140: 138*

[Casilla 62, Mollendo, Peru.] Annotated list of 149 spp.

Johnson, A. W., W. R. Millie, and G. Moffett. NOTES ON THE BIRDS OF EASTER ISLAND. *Ibis* 112(4): 532-538 + 1 pl. Oct. 1970. *WR 140: 138*

[Casilla 327, Santiago, Chile.] Eleven species of sea-birds were definitely identified. Specimens, photographs, and breeding records were obtained for most of them.

Kania, W. [BIRDS OF THE SOUTH-EASTERN PART OF THE NIEPOLOMICE FOREST.] *Acta Ornithol.* 11: 61-86. 1968. [From Auk 87(3), 1970. In (Polish).] *WR 140: 138*

Keve, A. DAS VOGELLEBEN DER MITTLEREN DONAU. [THE BIRD LIFE OF THE MIDDLE DANUBE.] *Studia Biol. Acad. Sci. Hungary* no. 7. 128 p. 1969. Price $4.80. [From Auk 87(4), 1970. In German.] *WR 140: 138*

King, Warren B. THE TRADE WIND ZONE OCEANOGRAPHY PILOT STUDY PART VII: OBSERVATIONS OF SEA BIRDS / MARCH 1964 TO JUNE 1965. *US F&WS, Spec. Sci. Rept.--Fisheries* no. 586. vi + 136 p., 36 figs. June 1970. *WR 140: 138*

[Smithsonian Inst., Washington, D.C.] In 3,561.1 hours of observation, 13,080 sightings were made of 65,707 birds along the replicate cruise track covering 34,384 nautical miles (63,610 km.). The distribution and abundance of each of the 51 spp. or field-recognizable subspecies observed within the

study area were treated on a monthly and seasonal basis and discussed in the light of the island of origin and breeding phenology of each species. The abundance of sea birds was examined in relation to environmental conditions to show the extent of their association. The composition, distribution, and abundance of flocks of sea birds were analyzed.--From abstr.

Kraus, M., G. Hohlt, P. Conradty, and E. Bauer. B. ZUR KENNTNIS DER VOGELWELT NORDGRIECHENLANDS III. [B. ON THE KNOWLEDGE OF THE AVIFAUNA OF NORTHERN GREECE. III.] *J. Ornithol.* 110: 83-89. 1969. [From Auk 87(4), 1970. In German with English summ.] *WR 140: 139*

Kumerloeve, H. NEUE BEITRAEGE ZUR KENNTNIS DER AVIFAUNA VON NORDOST- UND OST-KLEINASIEN. [CONTRIBUTION TO THE KNOWLEDGE OF THE AVIFAUNA OF NORTHEAST AND EAST ASIA MINOR.] *Istanbul Univ. Fen Fak. Mecm. Ser. B Sci. Nat.* 32(3/4): 79-213, illus. 1967. [From Biol. Abstr. 51(16), 1970. In German with Turkish and English summ.] *WR 140: 139*
The fauna is comprised of at least 314 spp.

Kuroda, N. H. [A SHORT NOTE ON ECOLOGICAL DISTRIBUTION OF TITS AND GOLD-CREST IN MT. FUJI AREA IN NOVEMBER.] *Misc. Repts. Yamashina's Inst. Ornithol.* 5: 420-425. 1968. [From Auk 87(3), 1970. In Japanese with English summ.] *WR 140: 139*
Analysis of census data.

Lathbury, Gerald. A REVIEW OF THE BIRDS OF GIBRALTAR AND ITS SURROUNDING WATERS. *Ibis* 112(1): 25-43, 1 fig. + 1 pl. Jan. 1970. *WR 140: 139*
[Hazeley House, Mortimer, Reading, Berkshire, England.] Annotated list of 198 spp.

Leporati, Lamberto. I MIGRATORI NELLE ZONE DI RIPOPOLAMENTO E CATTURA DELLA PROVINCIA DI BOLOGNA. [MIGRATORY BIRDS IN SOME RESTOCKING AND CAPTURE AREAS IN THE PROVINCE OF BOLOGNA.] *Angew. Ornithol.* 2(3): 122-125, illus. 1966. [From Biol. Abstr. 51(19), 1970. In Italian with French, German, and English summ.] *WR 140: 139*

Loehrl, Hans, and Gerhardt Thielcke. ZUR BRUTBIOLOGIE, OEKOLOGIE UND SYSTEMATIK EINIGER WALDVOEGEL AFGHANISTANS. [THE BIOLOGY OF BREEDING, THE ECOLOGY AND CLASSIFICATION OF SOME OF AFGHANISTANS WOODLAND BIRDS.] *Bonner Zool. Beitr.* 20(1-3): 85-98, illus. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 139*
[Max-Planck Inst. Verhaltensphysiologie, Vogelwarte, Radolfzell, Germany.]

Macmillan, Andrew T. SCOTTISH BIRD REPORT 1969. *Scottish Birds* 6(2): 62-136 + 4 pls. Summer 1970. *WR 140: 139*
Every species observed by recorders in Scotland in 1969 is listed. Number of birds of each species and location are given.

Manuwal, David A. BREEDING BIRD POPULATIONS IN THE CONIFEROUS FOREST OF WESTERN MONTANA. *M.S. thesis, Univ. Mont.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 139*

Merrill, Roy L., and Ralph D. Kirkpatrick. UTILIZATION OF THREE DELAWARE COUNTY, INDIANA BORROW PITS BY BIRDS. *Ind. Audubon Quart.* 48(1): 14-20. Feb. 1970. *WR 140: 139*
[Ball State Univ., Muncie, Ind.] During 88 censuses 18,736 birds of 51 spp. were counted. Results of surveys are given in four tables.

Mewes, Wolfgang. ZUR AVIFAUNA DES NATURSCHUTZGEBIETES "NORDUFER DES PLAUER SEES." [ON THE AVIFAUNA OF THE NATURE RESERVE "NORDUFER DES PLAUER SEES."] *Ornithol. Rundbrief Mecklenburgs* 10: 56-66, 1 fig. 1970. In German. *WR 140: 140*
Annotated list of 89 spp.

Milliman, J. D. FOUR SOUTHWESTERN CARIBBEAN ATOLLS: COURTOWN CAYS, ALBUQUERQUE CAYS, RONCADOR BANK AND SERRANA BANK. *Atoll Res. Bull.* no. 129. 26 p. 1969. [From Auk 87(3), 1970.] *WR 140: 140*

Mulsow, R. BEOBACHTUNGEN AN EINER SALZWASSER-LAGUNE IN ANDALUSIEN. [OBSERVATIONS OF BIRDS ON A SALTWATER LAGOON IN ANDALUSIA (SPAIN).] *Ornithol. Mitteil.* 22(8): 167-168. Aug. 1970. In German. *WR 140: 140*
[Dweerblöcken 54, Hamburg, Germany.]

Murray, Joseph James. THE BIRDS OF THE DISMAL SWAMP. *Va. J. Sci.* 20(4): 158-165. 1969. [From Biol. Abstr. 51(21), 1970.] *WR 140: 140*
[6 Jordan St., Lexington, Va.]

Nakamura, T., S. Yamaguchi, K. Iijima, and T. Kagawa. [A COMPARATIVE STUDY ON THE HABITAT PREFERENCE AND HOME RANGE OF FOUR SPECIES OF THE GENUS *EMBERIZA* ON PEAT GRASSLAND.] *Misc. Repts. Yamashina's Inst. Ornithol.* 5: 313-336. 1968. [From Auk 87(3), 1970. In Japanese with English summ.] *WR 140: 140*

Ouellet, Henri. CHANGES IN THE BIRD FAUNA OF THE MONTREAL REGION, CANADA. *Canadian Field-Nat.* 84(1): 27-34. Jan.-Mar. 1970. *WR 140: 140*
[McGill Univ., Montreal, Canada.] The changes observed in biotic complexes are mostly due to human interference and have given rise to new types of habitats. The author concludes that bird distribution is to a great extent controlled by the availability of suitable habitats.--From abstr.

Peitzmeier, J. DIE VOGELWELT DER WESTFAELISCHEN GETREIDELANDSCHAFTEN. [THE BIRD FAUNA OF THE WESTPHALIAN CORN-GROWING AREAS.] *Bonner Zool. Beitr.* 20(1-3): 151-163. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 140*
[Lintel 7, Wiedenbrück, Germany.]

Pikula, J. DIE DENSITÄT DER VOGELPOPULATIONEN IN *QUERCETO-CARPINETUM* UND *FAGUS SILVATICA-DENTARIA BULBIFERA*. [THE DENSITY OF BIRD POPULATIONS IN *QUERCETO-CARPINETUM* AND *FAGUS SILVATICA-DENTARIA BULBIFERA*.] *Acta Sci. Nat. Brno* 3: 1-69. 1969. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 140*

Rudge, Peter. THE BIRDS OF FOULNESS. *British Birds* 63(2): 49-66, 7 figs. + 2 pls. 1970. *WR 140: 140*
[Natl. Hospital, Queen Square, London, England.] The area forms the most important early winter refuge in the world for the dark-bellied brent geese *Branta bernicla bernicla*, which feed there on the largest beds of the eelgrass *Zostera noltii* in Europe, as well as a very significant resting and feeding place for many thousands of the commoner waders and gulls. A relatively large colony of little terns *Sterna albifrons* at Foulness Point is also important as this species has seriously decreased in Britain as a whole, largely through disturbance. These and other birds are discussed in this paper, together with the implications of the threatened destruction of the entire region by airport and industrial development.--From summ.

Rue, Leonard Lee III. PICTORIAL GUIDE TO THE BIRDS OF NORTH AMERICA. *Thomas Y. Crowell Company* (New York). xvi + 368 p., 140 photos, 80 [figs.], 6.5 x 9.5 in. 1970. Price $12.50. *WR 140: 140*
The habits, range, and behavior of 82 species are discussed. Photographs by the author illustrate some of the characteristics of his choice of favorite birds. The birds chosen are either "so common everyone knows something about

them, or so rare that most people know nothing about them." Distribution maps, description, habits, and habitat are given. The text includes references to man's relationship to the species through myths, historical associations, economic value, and recent conservation efforts.

Schmidt, Egon. VOGELBESTANDSAUFNAHMEN IN FELDHECKEN IN DER UMGEBUNG VON BUDAPEST. [BIRD INVENTORIES IN FIELD DITCHES IN THE SURROUNDINGS OF BUDAPEST.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 29: 77-84, illus. 1967/1968. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 141*

Schreiber, Ralph W., and N. Philip Ashmole. SEA-BIRD BREEDING SEASONS ON CHRISTMAS ISLAND, PACIFIC OCEAN. *Ibis* 112(3): 363-394, 6 figs. July 1970. *WR 140: 141*
[Univ. South Fla., Tampa.] Christmas Island, at 2° N, 157° W in the Central Pacific Ocean, supports 18 breeding species of sea-birds. Data on the breeding seasons collected by the authors and other visitors to the island are analyzed in individual species accounts. Population estimates are given, the distribution of each species on the island is outlined, and for some species information on the sexual and molt cycles of marked individuals is presented. Ultimate and proximate factors controlling breeding seasons and the role of social factors in maintaining breeding synchrony in sea-birds are discussed. The diversity of the breeding regimes exhibited on Christmas Island is compared with those found in the birds of Ascension Island and the Galapagos Archipelago.--From summ.

Siegfried, W. R., C. J. Skead, and J. M. Winterbottom. A LIST OF THE BIRDS OF THE GEORGE DISTRICT. *South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol.* no. 70. 26 p. 1970. Price 30¢. *WR 140: 141*

Sjöborg, K. [BIRDLIFE IN WATER-FILLED CLAY PITS IN THE UPPSALA AREA, CENTRAL SWEDEN.] *Vår Fågelvärld* 28: 177-193. 1969. [From Auk 87(3), 1970. In Swedish with English summ.] *WR 140: 141*

Skead, D. M. A PRELIMINARY LIST OF THE BIRDS OF THE WOLMARANSSTAD DISTRICT, TRANSVAAL. *South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol.* no. 69. 18 p. 1970. Price 40¢. *WR 140: 141*

Smith, F. R., and the Rarities Committee. REPORT ON RARE BIRDS IN GREAT BRITAIN IN 1969 (WITH 1960 AND 1968 ADDITIONS). *British Birds* 63(7): 267-293 + 3 pls. 1970. *WR 140: 141*
Annotated list of 103 spp. accepted as records of rarities sighted in Great Britain.

Smulders, B. J., and A. Joosse. AVIFAUNA VAN WALCHEREN. [BIRD LIFE OF WALCHEREN (NETHERLANDS).] *Wetensch. Meded. K.N.N.V.* 82: 1-83, illus. 1969. [From Biol. Abstr. 51(17), 1970. In Dutch with English summ.] *WR 140: 141*

Staub, F., and J. Gueho. THE CARGADOS CARAJOS SHOALS OR ST. BRANDON: RESOURCES, AVIFAUNA AND VEGETATION. *Proc. Royal Soc. Arts Sci. Mauritius* 3 (1): 9-46. 1968. [From Auk 87(3), 1970.] *WR 140: 141*

Stepanyan, L. S. [SYSTEMATIC LIST OF BIRD SPECIES OF THE USSR.] *Uch. Zap. Mosk. Gos. Pedagog. Inst. Lenina* 362. p. 303-334. 1969. [From Biol. Abstr. 51(23), 1970, from Referat. Zhur., Biol., 1970, no. 4I359. Transl. of Russian abstr.] *WR 140: 141*

Stirling, Ian, Stella M. Stirling, and Gwen Shaughnessy. THE BIRD FAUNA OF SOUTH NEPTUNE ISLANDS, SOUTH AUSTRALIA. *Emu* 70(4): 189-192, 1 fig. Oct. 1970. *WR 140: 141*
[Univ. Adelaide, Adelaide, Australia.] Annotated list of 34 spp.

Summerhayes, C. P. SEABIRDS SEEN IN THE NORTHERN TASMAN SEA IN WINTER. *New Zealand J. Mar. Freshwater Res.* 3(4): 560-570. 1970. [From Biol. Abstr. 51(17), 1970.] *WR 140: 142*
[New Zealand Oceanogr. Inst., Wellington, New Zealand.]

Todd, W. E. Clyde. BIRDS OF THE LABRADOR PENINSULA AND ADJACENT AREAS. *Univ. Toronto Press* (Toronto, Canada). xii + 819 p. + 8 pls. + 24 pages of photos, 8.75 x 11.25 in. 1963. Price $18.00. *WR 140: 142*
Twenty-five expeditions sponsored by the Carnegie Museum between 1901 and 1958 are the basis for this study of the ranges of birds of the Labrador Peninsula and the character and extent of its life zones. The bird life of the Peninsula is discussed from a bibliographic, a taxonomic, an ecological, and a distributional standpoint. New notes on the behavior and habits of several species are included. Photographs are primarily of the expeditions and of a few common species of the area. Distributional maps are included for some species.

Toschi, Augusto. INTRODUZIONE ALLA ORNITOLOGIA DELLA LIBIA. [INTRODUCTION TO THE ORNITHOLOGY OF LIBYA.] *Ric. Zool. Appl. Caccia* (suppl.) 6(1): 1-361. Dec. 1969. In Italian with English summ. *WR 140: 142*
Includes information on the geography, climate, geology, flora and fauna of Libya with a short history of the ornithologic research that has been carried on there. The distribution of birds is discussed according to the ecological conditions of the different biotopes, as well as the contribution of this distribution to the zoogeographical problems of North Africa. Biological conditions such as reproduction, migration, wintering and summering in the territory are examined, as are the distribution of nesting, wintering and summering birds in the different parts of the area.--From summ.

Urban, E. K. BIBLIOGRAPHY OF THE AVIFAUNA OF ETHIOPIA. *Haile Sellassie I Univ. Press* (Addis Ababa). 28 p. 1970. [From Auk 87(4), 1970.] *WR 140: 142*

Ventura, A. K. BIRDS OF CAYMANAS ESTATES, JAMAICA. THEIR COLLECTION AND HABITS. *Caribbean J. Sci.* 9: 39-52. 1969. [From Auk 87(3), 1970.] *WR 140: 142*

Verkerk, W. VOGELS VAN DE DUINEN. AVIFAUNA VAN HET NOORD-HOLLANDS DUINRESERVAAT (PROVINCIAAL WATERLEIDINGBEDRIJF VAN NOORD-HOLLAND.) [BIRDS OF THE DUNES. AVIFAUNA OF THE DUNE NATURE PRESERVE OF THE PROVINCE OF NORTH HOLLAND (PROVINCIAL WATER SUPPLY OF NORTH HOLLAND).] *Wetensch. Meded. K.N.N.V.* 70: 1-51, illus. 1967. [From Biol. Abstr. 51(15), 1970. In Dutch with English summ.] *WR 140: 142*

Woods, R. W. THE AVIAN ECOLOGY OF A TUSSOCK ISLAND IN THE FALKLAND ISLANDS. *Ibis* 112(1): 15-24, 2 figs. Jan. 1970. *WR 140: 142*
[Univ. Coll., Swansea, Glamorgan, Wales.] Summary: In the windswept and treeless Falkland Islands, the natural vegetation has been seriously depleted by two centuries of extractive farming. One habitat--mature Tussock-grass--is of vital importance to the resident birds, and those Tussock-covered islands that remain in a nearly natural state can support a far greater density and variety of bird species than any areas on the mainland. Kidney Island maintains a diverse avian fauna because it offers abundant cover, nest-sites, nest materials and food. In and around the dense mature Tussock-grass which covers about 90% of the surface, 28 bird species nest on the island; 18 of them occupy one or other of the six minor habitats which can be distinguished in the Tussock-grass. The nest-sites and interrelationships of these breeding species are described.

Andersson, I., S. Fredriksson, S. Jacobsson, and B. Silverin. POPULATION STUDIES ON BIRDS BY NETTING AND RINGING IN THE AMMARNÄS AREA, SWEDISH LAPLAND. *Vår Fågelvärld* 28: 241-244. 1969. [From Auk 87(3), 1970. In Swedish with English summ.] *WR 140: 143*

Ash, J. S. OBSERVATIONS ON A DECREASING POPULATION OF RED-BACKED SHRIKES. *British Birds* 63(5): 185-205, 3 figs. 1970. *WR 140: 143*

Studies of resident shrikes have been undertaken since 1954 in a 162-square-mile area with typical shrike habitat. Breeding biology and behavior are discussed. The area size and difficulties in censusing have made population figures incomplete, but a marked decline is still apparent.

Glue, David E. CHANGES IN THE BIRD COMMUNITY OF A HAMPSHIRE GRAVEL PIT 1963-68. *Bird Study* 17(1): 15-27, illus. 1970. [From Biol. Abstr. 51(21), 1970.] *WR 140: 143*

[British Trust Ornithol., Tring, Hertfordshire, England.]

Hilden, O. DIE INVASION DER LAPPLANDMEISE, *PARUS CINCTUS*, IN FINNLAND 1963/64. [THE INVASION OF THE SIBERIAN TIT *(PARUS CINCTUS)* IN FINLAND IN 1963/64.] *Vogelwarte* 24: 189-198. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 143*

Klaas, Erwin Eugene. A POPULATION STUDY OF THE EASTERN PHOEBE, *SAYORNIS PHOEBE*, AND ITS SOCIAL RELATIONSHIPS WITH THE BROWN-HEADED COWBIRD, *MOLOTHRUS ATER*. *Ph.D. thesis, Univ. Kans.* 177 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 143*

Kumari, Erik. CHANGES IN THE BIRD FAUNA OF THE MATSALU BAY DURING THE LAST 100 YEARS. *Ornis Fennica* 47(2): 45-51. 1970. In English with Finnish summ. *WR 140: 143*

[Akad. Zool. Bot. Inst., Tartu, Vanemuise 21, Estonian SSR.] In the period 1870-1970 the specific composition of the ornithofauna of the Matsalu Bay and the Kasari Delta has been to a great extent stable. Extensive drainage of the Kasari Delta in the period 1927-1937 has greatly influenced the displacement of habitats of birds and the expansion of landscape types formerly prevailing in the Kasari Delta to the west. A limited number of species, which formerly nested at Matsalu in small numbers, have given up nesting here. Several other species, not formerly represented here, have become breeding species.--From summ.

Loery, Gordon, editor. THIRTY-THIRD BREEDING BIRD CENSUS. *Audubon Field Notes* 23(6): 700-760, 7 [figs.]. Dec. 1969. *WR 140: 143*

[Litchfield Nature Center & Mus., Inc., Litchfield, Conn.] Seventy-eight breeding bird censuses were submitted from 26 states. Forest, desert, urban woodlot, brushy, fresh-water marsh, and grassland habitats, were censused; more than half the reports from previously censused routes show a decline both in the number of species recorded and in the density of breeding bird populations.

McClure, H. E. ESTIMATIONS OF BIRD POPULATION DENSITY IN PRIMARY FOREST OF MALAYA. *Malayan Nature J.* 22: 179-183. 1969. [From Ibis 112(3), 1970.] *WR 140: 143*

Melchert, Friedmund. DER VOGELBESTAND EINER FLUSSNIEDERUNG IM NORDEN VON BRAUNSCHWEIG UND SEINE FLUKTUATION VON 1959 BIS 1964. [THE BIRDS OF A RIVER LOWLAND IN THE NORTH OF BRUNSWICK AND THEIR FLUCTUATION FROM 1959 TO 1964.] *Vogelwelt* 91(2): 41-52, illus. 1970. [From Biol. Abstr. 51(23), 1970. In German with English summ.] *WR 140: 143*

[Sackring 34, Brunswick, Germany.]

Myhrberg, H. E. THE RINGING ACTIVITY AT AMMARNÄS IN 1963-1969. *Var Fagelvärld* 28: 245-248. 1969. [From Auk 87(3), 1970. In Swedish with English summ.] *WR 140: 144*
"Carduelis flammea."

North, C. A. PRELIMINARY REPORT ON HOUSE SPARROW REPRODUCTIVITY AND POPULATION FLUCTUATIONS IN COLDSPRING, WISCONSIN, 1969. *Internatl. Studies Sparrows* 3: 43-66. 1969. [From Auk 87(4), 1970.] *WR 140: 144*

Oelke, Hans. VOGELSIEDLUNGSDICHTEN IN DEN TROPEN (INSEL JAMAIKA, KARIBISCH SEE). [DENSITY OF BIRD POPULATIONS IN THE TROPICS (ISLAND JAMAICA, CARIBBEAN SEA).] *Vogelwelt* 89(6): 201-214, illus. 1968. [From Biol. Abstr. 51(20), 1970. In German with English summ.] *WR 140: 144*

Sanger, Gerald A. THE SEASONAL DISTRIBUTION OF SOME SEABIRDS OFF WASHINGTON AND OREGON, WITH NOTES ON THEIR ECOLOGY AND BEHAVIOR. *Condor* 72(3): 339-357, 9 figs. July 1970. *WR 140: 144*
[Univ. Wash., Seattle.] Seasonal cycles in occurrence and abundance were noted for the seven predominant species seen within an area bounded by long. 125°W and 140°W.--From summ. Courtesy/ Paul A. Stewart.

Shanholtzer, G. Frederick, Wayne J. Kuenzel, and Joseph J. Mahoney. TWENTY-ONE YEARS OF THE McKINNEY'S POND ROOKERY. *Oriole* 35(213): 23-28. June-Sept. 1970. *WR 140: 144*
[Univ. Ga., Athens.] Cattle egret, little blue heron, common egret, white ibis, green heron, and anhinga were randomly dispersed in the rookery.

Volchanetskii, I. B., A. S. Lisetskii, and Yu. K. Kholupyak. [ESTABLISHMENT OF ORNITHOFAUNA IN ARTIFICIAL STANDS OF THE SOUTHERN UKRAINE DURING 1936-1967.] *Vestnik Zool.* 4(1): 39-48. 1970. [From Biol. Abstr. 51(20), 1970. In Russian with English summ.] *WR 140: 144*
[Kharkov State Univ., Kharkov, USSR.]

Webb, William L., and Donald F. Behrend. EFFECT OF LOGGING ON SONGBIRD POPULATIONS IN A NORTHERN HARDWOOD FOREST: A PRELIMINARY ANALYSIS. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 211-217, 1 fig. 1970. *WR 140: 144*
[Syracuse Univ., Syracuse, N.Y.]

BIRDS--ECONOMICS, CONTROL, MORTALITY

Ceballos, P. PROTECCIÓN DE AVES INSECTIVORAS. [PROTECTION OF INSECTIVOROUS BIRDS.] *Boln. Serv. Plagas For.* 11: 79-85. 1968. [From Ibis 112(4), 1970. In Spanish.] *WR 140: 144*
"Parus, Certhia, and *Sitta."*

Ceballos, P. PREDATORES DE *THAUMETOPOEA PITYOCAMPA* SCHIFF. Y POSIBILIDADES DE UTILIZACIÓN. [PREDATORS OF *THAUMETOPOEA PITYOCAMPA* AND POSSIBILITIES OF THEIR UTILIZATION.] *Boln. Serv. Plagas For.* 12: 35-39. 1969. [From Ibis 112(4), 1970. In Spanish.] *WR 140: 144*
"Parus, Upupa, and *Clamator."*

Dawson, D. G., and P. C. Bull. A QUESTIONNAIRE SURVEY OF BIRD DAMAGE TO FRUIT. *New Zealand J. Agr. Res.* 13(2): 362-371. May 1970. *WR 140: 144*
[DSIR, P.O. Box 30466, Lower Hutt, New Zealand.] Abstract: Replies by New Zealand fruitgrowers to a questionnaire suggested that the most troublesome bird species in their crops were blackbird *(Turdus merula)*, song thrush *(Turdus ericetorum)*, myna *(Acridotheres tristis)*, starling *(Sturnus vulgaris)*, white-eye *(Zosterops lateralis)*, and house sparrow *(Passer domesticus)*; and that the most serious damage was to strawberries, grapes, cherries, pears,

and apples. Goldfinches *(Carduelis carduelis)* and redpolls *(Carduelis flammea)* ate strawberry seeds, and redpolls, sparrows, chaffinches *(Fringilla coelebs)*, and greenfinches *(Chloris chloris)* attacked fruit buds. Current control methods and their claimed effectiveness are tabulated.

Dolgushin, I. A. [RATIONAL UTILIZATION AND PROTECTION OF WILD BIRDS IN KAZAKHSTAN.] *VII Intern. Congr. Game Biol.* p. 501-502. 1967. In Russian. *WR 140: 145*
[Inst. Zool. Akad. Nauk Kazakhstan, Alma-Ata, USSR.]

England, M. D. BLACKBIRD'S DEATH CAUSED BY SNAIL. *British Birds* 63(2): 84-85. 1970. *WR 140: 145*
[Mashobra, Neatishead, Norwich, England.] *"Turdus merula."*

Fitzwater, William D. SONIC SYSTEMS FOR BIRD CONTROL. *Pest Control* 38(11): 9-10, 12-13, 16. Nov. 1970. *WR 140: 145*
[Univ. Calif., Davis.] An analysis of bird control systems which may be classified as audible disturbing noises, ultrasonics, and biosonics.

Imber, M. J., and B. W. Boeson. SEABIRDS FOUND DEAD IN NEW ZEALAND IN 1964. *Notornis* 16: 50-56. 1969. [From Auk 87(3), 1970.] *WR 140: 145*

Jackson, Jerome A. PREDATION OF A BLACK RAT SNAKE ON YELLOW-SHAFTED FLICKER NESTLINGS. *Wilson Bull.* 82(3): 329-330. Sept. 1970. *WR 140: 145*
[Miss. State Univ., State College.] *"Colaptes auratus* and *Elaphe obsoleta."*--Courtesy/ Paul A. Stewart.

Lamont, T. G., G. E. Bagley, and W. L. Reichel. RESIDUES OF O,P'-DDD AND O,P'-DDT IN BROWN PELICAN EGGS AND MALLARD DUCKS. *Bull. Environmental Contamination & Toxicol.* 5(3): 231-236. May-June 1970. *WR 140: 145*
[Patuxent Wildl. Res. Center, Laurel, Md.] *"Anas platyrhynchos* and *Pelecanus occidentalis."*

MacBriar, Wallace N., Jr. EIGHT-YEAR-OLD BANK SWALLOW *(RIPARIA RIPARIA). Bird-Banding* 41(2): 130. Apr. 1970. *WR 140: 145*
[Milwaukee Public Mus., Milwaukee, Wis.] Courtesy/ Paul A. Stewart.

Munteanu, Dan. ASPECTE ALE INFLUENTEI IERNII PRELUNGITE DIN ANUL 1963 ASUPRA PASARILOR MIGRATOARE IN BAZINUL MONTAN AL BISTRITEI. [ASPECTS OF THE INFLUENCE OF THE PROLONGED WINTER OF 1962-1963 ON THE MIGRATORY BIRDS OF THE MOUNTAINOUS BISTRIZA BASIN.] *Comun. Zool.* 1969: 51-55, illus. 1969. [From Biol. Abstr. 51(24), 1970. In Romanian with French and Russian summ.] *WR 140: 145*
[Soc. Stiint. Biol., Bucharest, Romania.]

Newton, I. SOME ASPECTS OF THE CONTROL OF BIRDS. *Bird Study* 17(2): 177-192. June 1970. *WR 140: 145*
[The Nature Conservancy, 12 Hope Terrace, Edinburgh, Scotland.] Modification of the habitat in favor of game or waterfowl results in a larger increase in population than does the control of predators. Reduction of a "pest" species depends upon its comparative significance in crop losses, the feasibility of obtaining a timely reduction, whether or not the reduction produces the desired effect, and the cost involved.

Tutman, I. BEOBACHTUNGEN AN OLIVENFRESSENDEN VÖGELN. [OBSERVATIONS UPON OLIVE-EATING BIRDS (YUGOSLAVIA).] *Vogelwelt* 90: 1-8. 1969. [From Ibis 112 (4), 1970. In German with English summ.] *WR 140: 145*

Zimmerman, Dale A. ROADRUNNER PREDATION ON PASSERINE BIRDS. *Condor* 72 (4): 475-476. Oct. 1970. *WR 140: 146*
[Western N. Mex. Univ., Silver City.] Observations of predation on *Junco oreganus mearnsi* and *Passer domesticus*.--Courtesy/ Paul A. Stewart.

BIRDS--PARASITES & DISEASES

Applegate, J. E., and R. L. Beaudoin. MECHANISM OF SPRING RELAPSE IN AVIAN MALARIA: EFFECT OF GONADOTROPIN AND CORTICOSTERONE. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 443-447, 1 fig. Oct. 1970. *WR 140: 146*
[Naval Med. Res. Inst., Bethesda, Md.]

Barus, Vlastimil, and Nerly Lorenzo Hernandez. NEMÁTODOS PARÁSITOS DE AVES EN CUBA. PARTE II. [NEMATODE PARASITES OF BIRDS IN CUBA. PART II.] *Poeyana Inst. Biol.* Ser. A 71: 1-26, 10 figs. 30 Mar. 1970. In Spanish with English summ. *WR 140: 146*
[Czech Acad. Sci., Prague, Czechoslovakia.] See *WR 129: 63* for Part I.

Cornelius, L. W. FIELD NOTES ON SALMONELLA INFECTION IN GREENFINCHES AND HOUSE SPARROWS. *Bull. Wildl. Disease Assoc.* 5(3): 142-143. July 1969. *WR 140: 146*
[20 Blacksmiths Hill, Sanderstead, Surrey, England.] Greenfinches and house sparrows remain on feeding tables until the food supply is exhausted, therefore they are exposed for long periods to carriers and linger on contaminated ground. Other species of birds feeding at the same time appeared unaffected.

Fleischman, Robert W., Robert A. Squire, W. J. L. Sladen, and John Moore. PATHOLOGIC CONFIRMATION OF MALARIA *(PLASMODIUM ELONGATUM)* IN AFRICAN PENGUINS *(SPHENISCUS DEMERSUS)*. *Bull. Wildl. Disease Assoc.* 4(4): 133-135, 3 figs. Oct. 1968. *WR 140: 146*
[Johns Hopkins Hospital, Baltimore, Md.]

Gabrašanski, Pavel. [THE ORNITHOSIS OF WILD BIRDS DURING THE TIME OF THEIR MIGRATION.] *VII Intern. Congr. Game Biol.* p. 475-478, 3 figs. 1967. In Russian with German summ. *WR 140: 146*
[Veterinarno-Med. Fakultet, Sofia, Bulgaria.]

Herman, Carlton M. BLOOD PROTOZOA OF FREE-LIVING BIRDS. *Symposia Zool. Soc. London* 24: 177-195, 2 figs. 1968. *WR 140: 146*
The genera under consideration, *Plasmodium*, *Haemoproteus*, *Leucocytozoon*, *Babesia*, *Lankesterella*, and *Trypanosoma*, all require an insect vector to complete their life cycle, and susceptible vectors have been demonstrated. An extensive volume of research has been conducted on *Plasmodium* because of its close similarity to malaria in man. Most experimental work on the blood protozoa of birds has been carried on with captive birds, since field studies that would provide information on the epizootiology of the parasites in wild populations have been limited. Methods developed by bird banders provide techniques for obtaining repeat examinations of free-living birds that can yield further pertinent data. The use that has been made of these techniques, beyond the mere procurement of a single blood film, is reviewed from the standpoint of providing knowledge of the epizootiology of the blood protozoa of birds and their further potential is projected.--From synopsis.

Herman, Carlton M., Richard M. Kocan, Elizabeth L. Snyder, and Julian O. Knisley, Jr. *PLASMODIUM ELONGATUM* FROM A PENGUIN. *Bull. Wildl. Disease Assoc.* 4(4): 132. Oct. 1968. *WR 140: 146*
[Kocan: Patuxent Wildl. Res. Center, Laurel, Md.]

Jones, M. B. RECENT ADVANTAGES IN OUR KNOWLEDGE AND CONTROL OF GAME-BIRD DISEASES. *VIII Intern. Congr. Game Biol.* p. 259-274. 1970. In English with Russian summ. *WR 140: 147*
[Game Res. Assoc., Fordingbridge, Hampshire, England.]

Kale, Herbert W. II, and William L. Jennings. A DISPOSABLE CAGE FOR STUDIES OF PATHOGENS IN SMALL WILD BIRDS. *Am. J. Trop. Med. Hyg.* 19(4): 733-734, 1 fig. July 1970. *WR 140: 147*
Abstract: A cage consisting of a disposable cardboard box 18 x 18 x 18 inches and a re-usable plywood front covered with 1-inch fish netting was designed for use in laboratory studies of St. Louis encephalitis virus in small wild birds. Mockingbirds and blue jays were maintained satisfactorily in these cages over a period of several months.

Kellogg, Forest Edwin III. PARASITE AND DISEASE STUDIES ON SOUTHEASTERN GAME BIRDS. *Ph.D. thesis, Univ. Ga.* 92 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 147*
Studies on bobwhites *(Colinus virginianus)* revealed that wild quail from high population density sample areas generally had heavier individual gastro-intestinal parasite burdens as well as a greater variety of parasites than did quail living in areas of low population. In pen-raised quail intestinal helminths were not found in birds reared and maintained in pens with wire floors. Helminth burdens in quail from pens with dirt floors varied in relation to sanitary conditions. Four Cestoda and eight Nematoda were found in bobwhites. The possibility of bobwhites serving as reservoir hosts for blackhead in wild turkey *(Meleagris gallopavo)* populations was investigated. Four Acarina, four Mallophaga and 3 Diptera were identified on wild turkey.

Kirmse, P., and H. Loftin. AVIAN POX IN MIGRANT AND NATIVE BIRDS IN PANAMA. *Bull. Wildl. Disease Assoc.* 5(2): 103-107. Apr. 1969. *WR 140: 147*
[Univ. Guelph, Guelph, Ontario, Canada.] Observed in 16 spp.

Kirmse, Peter. HOST SPECIFICITY AND PATHOGENICITY OF POX VIRUSES FROM WILD BIRDS. *Bull. Wildl. Disease Assoc.* 5(4): 376-386. Oct. 1969. *WR 140: 147*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: An attempt was made to differentiate avian pox viruses by means of transmission experiments and cross-immunity tests, and to compare the results with those of other workers. It is concluded that a further clarification of the differences in susceptibility of bird hosts and in virulence of virus strains can only be achieved when the immune status of the experimental birds can be determined by reliable tests.

Klukas, R. W., and L. N. Locke. AN OUTBREAK OF FOWL CHOLERA IN EVERGLADES NATIONAL PARK. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 77-79. Jan. 1970. *WR 140: 147*
[Everglades Natl. Park, Homestead, Fla.]

Macdonald, J. W. NEW SPECIES OF SUBCUTANEOUS MITE IN SHAGS AND CORMORANTS. *British Birds* 63(2): 80-81. 1970. *WR 140: 147*
[M.A.F.F. Vet. Lab., Lasswade, Midlothian, Scotland.]

Mueller, N. S., H. C. Mueller, and D. D. Berger. HOST RECORDS AND PHENOLOGY OF LOUSE FLIES ON WISCONSIN BIRDS. *Wis. Acad. Sci., Arts & Lett.* 57: 189-207. 1969. [From Ibis 112(4), 1970.] *WR 140: 147*

Peirce, M. A., and G. C. Backhurst. OBSERVATIONS ON THE HAEMATOZOA FOUND IN BIRDS FROM THE NORTHERN FRONTIER DISTRICT OF KENYA. *East African Wildl. J.* 8: 208-212. Aug. 1970. *WR 140: 147*
[East African Vet. Res. Organisation, Muguga, P.O. Kabete, Kenya.]

BIRDS--PARASITES & DISEASES--Continued

Polcyn, Gerald M. THE CAPILLARY TUBE IN AVIAN BLOOD STUDIES. *Bird-Banding* 41(2): 132-133. Apr. 1970. *WR 140: 148*
[Univ. S. Dak., Vermillion.] "In our studies of avian haematozoa we have found capillary tubes of various diameters to be indispensable tools for handling whole blood, sera, or serum fractions."--Courtesy/ Paul A. Stewart.

Post, William, and Frank Enders. THE OCCURRENCE OF MALLOPHAGA ON TWO BIRD SPECIES OCCUPYING THE SAME HABITAT. *Ibis* 112(4): 539-540. Oct. 1970. *WR 140: 148*
[N.C. State Univ., Raleigh.] Infestation was significantly higher on *Ammospiza maritima* than on *A. caudacuta*, which has two molts per year; *A. maritima* has only one.

Rosen, Merton N. SPECIES SUSCEPTIBILITY TO AVIAN CHOLERA. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 195-200, 1 fig. July 1969. *WR 140: 148*
[Calif. Dept. Fish & Game, Sacramento.] The relation between population size of the individual waterfowl species and the respective mortality rates was not statistically significant. No correlation could be found for the average weights and the death rates occurring in each species. The widgeon duck, white-fronted goose and coot had higher losses from avian cholera than other waterfowl. Gulls were more resistant to *P. multicoda* than the coot, and the laboratory rat was completely resistant whereas the Norway rat was susceptible.--From abstr.

GAME BIRDS--GENERAL

Brown, Philip, and Jeffery Harrison, editors. WAGBI ANNUAL REPORT AND YEAR BOOK 1968-1969. *Wildfowlers' Assoc. Great Britain & Ireland.* 64 p. [1969.] *WR 140: 148*
Includes reports on studies of duck production in Britain and management of gadwall, greylag goose, and woodpigeon.

Bureau of Sport Fisheries and Wildlife. [FOREIGN GAME LEAFLETS.] *US F&WS.* 4 p. 1970. Available from Supt. Documents at 10¢. *WR 140: 148*
The following titles are available in the Foreign Game Leaflet series:

FGL-1	The Black Francolins
FGL-2	The Gray Francolins
FGL-3	The Redwing Francolins
FGL-4	The South African Graywing Francolins
FGL-5	The Black Grouse
FGL-6	The Red Junglefowls
FGL-7	The Bearded Partridges
FGL-8	The Eastern Gray Partridges
FGL-9	The Manchurian Ring-Necked Pheasant
FGL-10	The Coturnix or Old World Quails
FGL-11	The Yellow-Necked Spurfowl
FGL-12	The Copper Pheasants
FGL-13	The Green Pheasants
FGL-14	The Reeves Pheasant
FGL-15	The South Korean Ring-Necked Pheasant
FGL-16	The Red-Legged Partridges

Dontschev, Stefan. [STATUS, DISTRIBUTION AND UTILIZATION OF GAME BIRDS IN BULGARIA.] *VII Intern. Congr. Game Biol.* p. 585-588. 1967. In Russian with German summ. *WR 140: 148*
[Zool. Inst. Bulgarian Akad. Nauk, Sofia, Bulgaria.]

Game Conservancy. ANNUAL REVIEW 1969/70. *Game Conservancy* (formerly Eley Game Advisory Sta.). 91 p., illus. 1970. *WR 140: 149*
[Fordingbridge, Hampshire, England.] Partridge population and habitat studies are discussed; continuing research on grouse habitat, pheasant studies, and wildfowl populations is described.

Kuznetsov, B. A. [CURRENT POSITION AND PROSPECTS OF GAME BIRD REARING IN THE USSR.] *VIII Intern. Congr. Game Biol.* p. 372-375. 1970. In Russian with English summ. *WR 140: 149*

MacDonald, Duncan, and Thomas R. Evans. ACCELERATED RESEARCH ON MIGRATORY WEBLESS GAME BIRDS. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 149-156. 1970. *WR 140: 149*
[Migratory Bird Populations Sta., Laurel, Md.] "Columbidae, Scolopacidae, Rallidae, and Gruidae."

Merrill, George W. GAME BIRD HARVEST 1969. *N. Mex. Wildl.* 15(5): 30-31. Sept.-Oct. 1970. *WR 140: 149*
Hunting statistics for ducks, geese, cranes, doves, quail, pheasants, blue grouse, and lesser prairie chickens are tabulated.

Mottl, Stanislav. THE SEX RATIO IN PARTRIDGE AND PHEASANT POPULATIONS. *VIII Intern. Congr. Game Biol.* p. 369-371. 1970. In English with Russian summ. *WR 140: 149*
[Czechoslovak Hunting Union, Game Res. & Services, Prague, Czechoslovakia.]

Pekić, Božidar. POSSIBILITIES OF INCREASING REPRODUCTION OF SOME FEATHERED GAME SPECIES. *VII Intern. Congr. Game Biol.* p. 243-250, 4 figs. 1967. In English with Russian summ. *WR 140: 149*
[Inst. Biol., Belgrade, Yugoslavia.]

Raitis, Tapio. KANALINTUJEN SUOLISTOTILAVUUKSISTA. [ON THE INTESTINAL VOLUMES OF GALLINACEOUS BIRDS.] *Suomen Riista* 22: 140-144. 1970. In Finnish with English summ. *WR 140: 149*

Wayre, Philip, editor. THE PHEASANT TRUST AND NORFOLK WILDLIFE PARK / ANNUAL REPORT 1969. *Pheasant Trust & Norfolk Wildl. Park* (Norwich, England). 41 p., illus. [1970.] *WR 140: 149*

QUAIL

Anthony, Robert. ECOLOGY AND REPRODUCTION OF CALIFORNIA QUAIL IN SOUTHEASTERN WASHINGTON. *Condor* 72(3): 276-287, 12 figs. July 1970. *WR 140: 149*
[Ariz. Coop. Wildl. Res. Unit, Tucson.] For *Lophortyx californicus* the following are discussed: sex ratios, age ratios, female reproductive cycle, male reproductive cycle, body weight fluctuations, broods, and postnuptial molt.--Courtesy/ Paul A. Stewart.

Anthony, Robert G. FOOD HABITS OF CALIFORNIA QUAIL IN SOUTHEASTERN WASHINGTON DURING THE BREEDING SEASON. *J. Wildl. Mgmt.* 34(4): 950-953. Oct. 1970. *WR 140: 149*
[Ariz. Coop. Wildl. Res. Unit, Tucson.] Abstract: Food habits of California quail *(Lophortyx californicus)* were ascertained by analysis of 157 quail crops collected from March-September, 1967. The spring (March, April, and May) diet of immatures and adults was different from the summer diet. Green plant material was a very important food of adults and immatures during the spring months. Jagged chickweed *(Holosteum umbellatum)* comprised most of the green plant material taken and was the most important plant species utilized. Juvenile quail were not selective, but consumed a wide variety of different plant species. Older quail were selective for seeds of lambsquarter *(Chenopodium* spp.*)*, fiddleneck *(Amsinckia intermedia)*, and filaree *(Erodium cicutarium)*.

Banks, Roger L. AN ECOLOGICAL STUDY OF SCALED QUAIL IN SOUTHEASTERN NEW MEXICO. *M.S. thesis, N. Mex. State Univ.* 63 p. 1970. *WR 140: 150*
Mating calls were first heard April 13. Hatching was estimated to range from April through September, with coveys beginning to form in August. Seeds represented about 75% of the fall and winter diet, and 60% in the summer. Insects constituted about 16% of the fall and winter diet, increasing to 30% in summer. Mesquite *(Prosopis juliflora)* was an important escape cover and was used for loafing sites. Quail appeared to prefer areas which provided the greatest amount of vegetational variety.--From abstr. Courtesy/ Charles A. Davis.

Barus, Vlastimil. NEMATODOS DE CODORNIZ, *COLINUS VIRGINIANUS CUBANENSIS* (GRAY). [NEMATODES OF QUAIL *(COLINUS VIRGINIANUS CUBANENSIS).*] *Torreia Nueva Ser.* no. 20. 8 p., 2 figs. 27 Dec. 1969. In Spanish with English summ. *WR 140: 150*
[Czech Acad. Sci., Prague, Czechoslovakia.]

Brenner, Fred J., and Phillip Carlson. ENERGY AND NUTRIENT REQUIREMENTS OF INDIVIDUAL AND PAIRED BOBWHITE QUAIL DURING PERIODS OF *AD LIB* AND RESTRICTED FEEDINGS WITH NOTES ON ULCERATIVE ENTERITIS. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 141-149, 2 figs. 1970. *WR 140: 150*
[Grove City Coll., Grove City, Pa.]

Brown, John, Donald L. Dawe, Rudy Killingsworth, and Richard B. Davis. ANTIBIOTIC TREATMENT OF ULCERATIVE ENTERITIS OF BOBWHITE QUAIL. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 8-12. Jan. 1970. *WR 140: 150*
[Univ. Ga., Athens.] Abstract: Penicillin-streptomycin, bacitracin methylene disalicylate, zinc bacitracin, soluble bacitracin methylene disalicylate, streptomycin (25%) and spectinomycin were used as prophylactic and therapeutic treatments for ulcerative enteritis in bobwhite quail *(Colinus virginianus).* Penicillin-streptomycin was the most effective prophylactic and streptomycin (25%) was the most effective therapeutic agent.

Buckner, James Lee. EFFECTS OF BURNING AND DISKING ON AVAILABLE SEED SUPPLIES OF THE BOBWHITE QUAIL, *COLINUS VIRGINIANUS* L., IN THE LONGLEAF PINE OF SOUTHWEST GEORGIA. *M.S. thesis, Univ. Ga.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 150*

Davis, R. B. SURVIVAL OF HATCHERY RAISED BOBWHITE QUAIL. *Texas Parks & Wildl. Dept. Tech. Ser.* no. 4. 10 p. 1970. *WR 140: 150*

Jones, Richard E. EFFECT OF SEASON AND GONADOTROPIN ON TESTICULAR INTERSTITIAL CELLS OF CALIFORNIA QUAIL. *Auk* 87(4): 729-737, 2 figs. Oct. 1970. *WR 140: 150*
[Univ. Colo., Boulder.] As spermatogenesis began in the spring the interstitial cells became more abundant and their nuclei became larger. Lipids were slowly depleted from the cells as spermatogenesis progressed. These trends reversed during testis regression.--Courtesy/ Paul A. Stewart.

Liburd, Eugene M., and Jerome L. Mahrt. *EIMERIA LOPHORTYGIS* N. SP. AND *E. OKANAGANENSIS* N. SP. (SPOROZOA: EIMERIIDAE) FROM CALIFORNIA QUAIL *LOPHORTYX CALIFORNICUS* IN BRITISH COLUMBIA. *J. Protozool.* 17(2): 352-353, 2 figs. 1970. *WR 140: 150*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Rubel, Edwin W. EFFECTS OF EARLY EXPERIENCE ON FEAR BEHAVIOUR OF *COTURNIX COTURNIX*. *Animal Behaviour* 18(3): 427-433, 8 figs. Aug. 1970. *WR 140: 151*
[Univ. Calif., Irvine.] Isolated *Coturnix* quail of two post-hatch ages were individually exposed to a moving, flashing, clicking stimulus on the day of hatching. Two other groups received identical treatment except for exposure to the stimulus, and a fifth group was given no initial treatment. Results indicate that there is a sensitive period in the development of *Coturnix* during which exposure to a stimulus will produce a diminution in fear behaviors later elicited by that stimulus.--From summ.

Vince, Margaret A., and R. Cheng. THE RETARDATION OF HATCHING IN JAPANESE QUAIL. *Animal Behaviour* 18(2): 210-214, 1 fig. May 1970. *WR 140: 151*
[Cambridge Univ., Cambridge, England.] Summary: Two experiments were carried out to determine under what conditions of natural stimulation Japanese quail embryos can be retarded. In the first the developmental age of the stimulating embryo was brought nearer to that of the experimental egg than had been done in previous experiments; this gave negative results. In the second experiment eggs were stimulated by varying numbers of eggs put into the incubator late: this showed that a Japanese quail embryo can be retarded by increasing the number of delayed eggs with which it is in contact, that is, by increasing the amount of retarding stimulation.

PHEASANTS

Anderson, William L., and Peggy L. Stewart. CONCENTRATIONS OF CHEMICAL ELEMENTS IN PHEASANT TISSUES. *Ill. Nat. Hist. Surv., Biol. Notes* no. 67. 15 p. Apr. 1970. *WR 140: 151*
[Ill. Nat. Hist. Surv., Urbana.] "This paper reports the concentrations of five major elements and 18 trace elements in selected body parts (blood, bones, fat, feathers, muscles, and internal organs) of 54 hen pheasants *(Phasianus colchicus)* collected from three areas in Illinois. The analyses were conducted during an investigation of the possible effects of inorganic ions on the distribution and abundance of pheasants in this midwestern state."

Blank, Terence H. THE RECOVERY OF REARED PHEASANTS RELEASED ON AN ENGLISH PHEASANT SHOOT. *VIII Intern. Congr. Game Biol.* p. 361-365. 1970. In English with Russian summ. *WR 140: 151*
[Eley Game Advisory Sta., Fordingbridge, Hampshire, England.]

Bray, R. P. MEASURING THE MORTALITY OF RELEASED PHEASANTS. *VIII Intern. Congr. Game Biol.* p. 366-368. 1970. In English with Russian summ. *WR 140: 151*
[Game Res. Assoc., Fordingbridge, Hampshire, England.]

Đuričić-Popović, Vera. L'ACTIVITÉ NEUROSÉCRÉTOIRE DE L'HYPOTHALAMUS DU FAISAN. [NEUROSECRETORY ACTIVITY OF THE HYPOTHALAMUS OF THE PHEASANT.] *VII Intern. Congr. Game Biol.* p. 99-104, 5 figs. 1967. In French with German summ. *WR 140: 151*
[Bulevar JNA 18, Belgrade, Yugoslavia.]

Etter, Stanley L., John E. Warnock, and G. Blair Joselyn. MODIFIED WING MOLT CRITERIA FOR ESTIMATING THE AGES OF WILD JUVENILE PHEASANTS. *J. Wildl. Mgmt.* 34(3): 620-626, 1 fig. July 1970. *WR 140: 151*
[Ill. Nat. Hist. Surv., Urbana.] Abstract: Comparison of the growth rate of the primary wing feathers of recaptured wild Illinois pheasants *(Phasianus colchicus)* with that of pen-reared birds (Trautman 1950) indicated that the 10th (outermost) primary feathers of wild pheasants grew faster than did those of pen-reared birds. Suggested modifications of Trautman's age criteria based upon the rate of growth of the 10th primaries of recaptured birds are presented. Chronologies of hatching derived from the estimated ages of fall-trapped wild juvenile pheasants, using modified age criteria, were in closer agreement with nest data from the same study area than were chronologies of hatching derived using unmodified criteria.

Gates, John M. RECOMMENDATIONS FOR A SCATTERED WETLANDS PROGRAM OF PHEASANT HABITAT PRESERVATION IN SOUTHEAST WISCONSIN. *Wis. Dept. Nat. Resources, Res. Rept.* 63. iii + 24 p., illus. 1970. *WR 140: 152*
Specific guidelines are presented on the size and distribution of management units, the optimum spacing of nesting cover in relation to winter cover, the amount and type of wetland cover essential for preservation, and subsequent management to maintain those wetland types of maximum value to pheasants.--From abstr.

Hanson, William R. PHEASANT NESTING AND CONCEALMENT IN HAYFIELDS. *Auk* 87(4): 714-719. Oct. 1970. *WR 140: 152*
[Calif. State Coll., Los Angeles.] Ring-necked pheasants *(Phasianus colchicus)* placed their nests in relatively large, dense plant cover.--Courtesy/ Paul A. Stewart.

Hanuš, V. [RELEASE OF YOUNG ARTIFICIALLY-RAISED PHEASANTS AND THEIR DEGREE OF SURVIVAL.] *VII Intern. Congr. Game Biol.* p. 393-395. 1967. In Russian with French summ. *WR 140: 152*
[VULHM, Zbaslav-Prague, Czechoslovakia.]

Heinz, Gary Howard. RESPONSES OF RING-NECKED PHEASANT CHICKS TO CONSPECIFIC CALLS. *Ph.D. thesis, Mich. State Univ.* 41 p. 1969. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 152*

Hromas, Josef. ANALYSE DER VERLUSTE AN JAGDFASANEN IN DEN WINTERLICHEN BEHERBERGUNGSZENTREN IN VOLIEREN. [AN ANALYSIS OF THE CAUSES OF DEATH IN PHEASANTS KEPT UNDER CONFINEMENT CONDITIONS.] *Acta Univ. Agr. Fac. Silvicult.* 37(4): 335-349, illus. 1968. [From Biol. Abstr. 51(17), 1970. In German with Czech and English summ.] *WR 140: 152*

Košmerl, S., H. Mazija, S. Cvetnić, M. Kralj, and M. Herceg. ISTRAŽIVANJA BOLESTI PERNATE DIVLJAČI. II. KONGENITALNI IMUNITET PROTIV ATIPIČNE KUGE PERADI U FAZANSKIH PILIĆA PORIJEKLOM OD VAKCINIRANIH FAZANKI. [STUDIES ON DISEASES OF GAME BIRDS. II. THE INHERITED IMMUNITY AGAINST NEWCASTLE DISEASE IN PHEASANT CHICKS ORIGINATING FROM VACCINATED PHEASANT HENS.] *Veterinarski Arhiv* 40(9-10): 237-244. 1970. In Serbo-Croatian with English summ.
WR 140: 152
"Phasianus mongolicus."

Kuck, Thomas L., Robert B. Dahlgren, and Donald R. Progulske. MOVEMENTS AND BEHAVIOR OF HEN PHEASANTS DURING THE NESTING SEASON. *J. Wildl. Mgmt.* 34(3): 626-630, 2 figs. July 1970. *WR 140: 152*
[S. Dak. Dept. Game, Fish & Parks, Aberdeen.] Abstract: Five hen pheasants *(Phasianus colchicus)* on a state-owned public shooting area in east-central South Dakota were fitted with 151 mHz radio transmitters during spring and summer periods of 1965 and 1966. Two of them, radio-equipped while in early stages of incubation, successfully renested and brought off broods. Ranges of five hens were 20-52 acres and averaged 30.8. Eggs were laid after midday and time spent on the nest increased with number of eggs laid. Hens usually left the nest for about an hour in the afternoon. Brood-rearing was restricted to 5-10 acres around the nest for the first 3 weeks. The renesting interval for two hens was 10 and 11 days and renests were approximately 485 and 578 ft from the first.

Myers, James E. ECOLOGY OF THE WILD-TRAPPED AND TRANSPLANTED RINGNECKED PHEASANT NEAR CENTRE HALL, PENNSYLVANIA. *M.S. thesis, Pa. State Univ.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.)
WR 140: 152

PHEASANTS--Continued

Myers, James E. THE ECOLOGY OF THE WILD-TRAPPED AND TRANSPLANTED RING-NECKED PHEASANT NEAR CENTRE HALL, PENNSYLVANIA. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 216-220. 1970. *WR 140: 153*
[R.I. Dept. Nat. Resources, West Kingston.]

Shave, Hazel J. PROGRESSIVE PATHOLOGIC SIGNS OF BOTULISM IN PHEASANTS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 402-403. Oct. 1970. *WR 140: 153*
[Animal Disease Res. & Diagnostic Lab., Brookings, S. Dak.]

Wayre, Philip, editor. ORNAMENTAL PHEASANT TRUST AND THE NORFOLK WILDLIFE PARK / ANNUAL REPORT 1968. *Ornamental Pheasant Trust & Norfolk Wildl. Park* (Norwich, England). 35 p., illus. [1969.] *WR 140: 153*
Report on the activities, including research and census data, of the Ornamental Pheasant Trust and Norfolk Wildlife Park for 1968.

GROUSE, PARTRIDGE, ETC.

Ash, John S. BAG RECORDS AS INDICATORS OF POPULATION TRENDS IN PARTRIDGES. *VIII Intern. Congr. Game Biol.* p. 357-360, 2 figs. 1970. In English with Russian summ. *WR 140: 153*
[Game Res. Assoc., Fordingbridge, Hampshire, England.]

Barrett, Ronald Wilde. BEHAVIOR OF RUFFED GROUSE DURING THE BREEDING AND EARLY BROOD REARING PERIODS. *Ph.D. thesis, Univ. Minn.* 317 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 153*

Berner, Alfred Henry. HABITAT ANALYSIS AND MANAGEMENT CONSIDERATIONS FOR RUFFED GROUSE ON A MULTIPLE USE AREA IN MICHIGAN. *Ph.D. thesis, Mich. State Univ.* 117 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 153*
Grouse management should be limited primarily to the transition zone from poorly-drained lowland soil to well-drained upland soil, and should consist of clear cutting 5-10 acre blocks or 300-600 foot wide strips of aspen in 40-50 years rotations and 10-year cycles.

Branković, M., M. Davidović, and D. Popesković. RESISTANCE DE LA PERDRIX AUX TEMPERATURES EXTERIEURES EXTREMEMENT BASSES. [SOME THERMOGENETIC CHARACTERISTICS AND THE RESISTANCE OF THE PARTRIDGE *(PERDIX PERDIX)* AGAINST EXTREMELY LOW EXTERNAL TEMPERATURE.] *VII Intern. Congr. Game Biol.* p. 251-253. 1967. In French with English summ. *WR 140: 153*
[Bulevar JNA 18, Belgrade, Yugoslavia.]

Bruton, Charles William. THE ECOLOGY OF A SMALL POPULATION OF RUFFED GROUSE *BONASA UMBELLUS* (LINNAEUS) IN A NORTHERN HARDWOOD FOREST. *Ph.D. thesis, Univ. N. Dak.* 89 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 153*
Observations were made of the seasonal behavior of grouse in order to trace patterns of movements for food and to determine cover preferences. Data were also collected on population density and structure, turnover, reproductive success and behavior. Habitat management was investigated.

Campbell, Howard. A DOZEN YEARS OF BLUE GROUSE. *N. Mex. Wildl.* 15(5): 13-15. Sept.-Oct. 1970. *WR 140: 153*
Results of blue grouse hunting in New Mexico are tabulated for the years 1958-69.

Car, Zvonko. BEITRAG ZUR POPULATIONS-ÖKOLOGIE DES *TETRAO UROGALLUS* L. IN KROATIEN. [CONTRIBUTION ON THE POPULATION ECOLOGY OF *TETRAO UROGALLUS* L. IN CROATIA.] *VIII Intern. Congr. Game Biol.* p. 146-151. 1970. In German with Russian summ. *WR 140: 154*

Carr, Harold D., and Fred A. Glover. EFFECTS OF SAGEBRUSH CONTROL ON SAGE GROUSE. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 205-215, 1 fig. 1970. *WR 140: 154*

[Alberta Fish & Wildl. Div., Calgary, Canada.] Residues of 2,4-D were detected in sage grouse muscle and brain, but its effects were not determined. By 1.5 years after spraying, sagebrush control had not obviously affected strutting activities or grounds. Neither had it definitely affected nesting density or success; however, nests on sprayed areas tended to be near unsprayed areas. The effects of sagebrush control on nesting may become more evident as dead sagebrush deteriorates. Brood production and survival had not noticeably been affected. Sprayed sagebrush affected but did not hamper movements of adult sage grouse; however, they avoided block-sprayed areas (except for strutting), probably because necessary habitat requirements were lacking. Areas sprayed in 50-yard wide strips had no obvious effects on distribution or movements of adult sage grouse. Brood movements apparently were impeded by sprayed areas.--From summ. & concl.

Coggin, Joe L. GROUSE MANAGEMENT STUDY YIELDS UNEXPECTED RESULTS. *Va. Wildl.* 31(10): 10-11, illus. Oct. 1970. *WR 140: 154*

Treatment of 22 one-half acre plots with Dybar (25% Fenuron) to create small openings in an unbroken forest did not result in any appreciable change in the grouse population. Number of birds flushed increased 54.5% between the pre-treatment and post-treatment period in the control area, but no increase occurred in the treated plots.

Cringan, A. T. REPRODUCTIVE BIOLOGY OF RUFFED GROUSE IN SOUTHERN ONTARIO, 1964-69. *J. Wildl. Mgmt.* 34(4): 756-761, 1 fig. Oct. 1970. *WR 140: 154*

[Colo. State Univ., Fort Collins.] Abstract: Clutch size, hatchability, and hatching dates of the ruffed grouse, *Bonasa umbellus*, in southern Ontario, were studied by collecting eggs from nests of wild birds between 1964 and 1969 and hatching them in incubators. Forty-five clutches of 16 eggs or fewer averaged 11.5 eggs. Differences in mean clutch size among the 6 years and among the 6 Forest Districts represented were not significant. Late-hatching clutches, averaging 8.5 eggs, were significantly smaller than early-hatching clutches, which averaged 11.9 eggs. Variations in hatching success among years were insignificant, except for a low success in 1969 which may have been due to power failures.

Davis, J. A. THE POSTJUVENAL WING AND TAIL MOLT OF THE RUFFED GROUSE *(BONASA UMBELLUS MONTICOLA)* IN OHIO. *Ohio J. Sci.* 68: 305-312. 1968. [From Auk 87 (3), 1970.] *WR 140: 154*

Eastman, Donald S., and David Jenkins. COMPARATIVE FOOD HABITS OF RED GROUSE IN NORTHEAST SCOTLAND, USING FECAL ANALYSIS. *J. Wildl. Mgmt.* 34(3): 612-620. July 1970. *WR 140: 154*

[Univ. British Columbia, Vancouver, Canada.]

Efremov, P. G. [ADAPTIVE FEATURES OF THE CAPERCAILLIE AS RELATED TO A SYLVAN WAY OF LIFE AND DIET.] *Uch. Zap. Maruak. Gos. Pedagog. Inst.* 30: 49-53. 1968. [From Biol. Abstr. 51(17), 1970, from Referat. Zhur., Biol., 1969, no. 8I363. In Russian.] *WR 140: 154*

Evans, K. E. CHARACTERISTICS AND HABITAT REQUIREMENTS OF THE GREATER PRAIRIE CHICKEN AND SHARP-TAILED GROUSE--A REVIEW OF THE LITERATURE. *U.S. Dept. Agr. Conserv. Res. Rept.* no. 12. 32 p. 1968. [From Ibis 112(4), 1970.] *WR 140: 154*

Gabranšanski, P., and S. Dončev. [THE CAPERCAILLE *(TETRAO UROGALLUS)* IN BULGARIA.] *VIII Intern. Congr. Game Biol.* p. 152-155. 1970. In Russian with German summ. *WR 140: 155*
[Dončev: Zool. Inst., Sofia, Bulgaria.]

Gates, C. E., W. H. Marshall, and D. P. Olson. LINE TRANSECT METHOD OF ESTIMATING GROUSE POPULATION DENSITIES. *Biometrics* 24: 135-145. 1968. [From Ibis 112(1), 1970.] *WR 140: 155*

Godfrey, Geoffrey A. SNOW ROOSTING BEHAVIOR OF IMMATURE RUFFED GROUSE. *Auk* 87(3): 578-579. July 1970. *WR 140: 155*
[Univ. Minn., St. Paul.] In their first experience with snow immature ruffed grouse *(Bonasa umbellus)* entered snow burrows 2.5 to 4 feet long.--Courtesy/ Paul A. Stewart.

Gullion, Gordon W. FACTORS AFFECTING RUFFED GROUSE POPULATIONS IN THE BOREAL FORESTS OF NORTHERN MINNESOTA, USA. *VIII Intern. Congr. Game Biol.* p. 103-117, 4 figs. 1970. In English with Russian summ. *WR 140: 155*
[Univ. Minn., Cloquet.]

Gullion, Gordon W. FACTORS INFLUENCING RUFFED GROUSE POPULATIONS. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 93-105, 3 figs. 1970. *WR 140: 155*
[Univ. Minn., Cloquet.]

Haker, Martin, and Svein Myrberget. ORRFUGLBEITING PA BUSKFURU. [BROWSING BY *LYRURUS TETRIX* ON *PINUS MUGO* VAR. *ARBOREA.*] *Sterna* 8(5): 243-247, illus. 1969. [From Biol. Abstr. 51(15), 1970. In Norwegian with English summ.] *WR 140: 155*
[Stavanger Mus., Stavanger, Norway.]

Hein, Dale. DUST-BATHING SITES SELECTED BY RUFFED GROUSE. *Wilson Bull.* 82(3): 310-314, 1 fig. Sept. 1970. *WR 140: 155*
[Colo. State Univ., Fort Collins.] Four factors were evidently important in determining location of dust bathing sites: (1) sand substrate, (2) exposure to the sun, (3) proximity of dense cover, and (4) maximum visibility for the grouse of clear routes of approach to the site.--Courtesy/ Paul A. Stewart.

Hein, Dale. THE RUFFED GROUSE NEAR THE SOUTHEAST EDGE OF ITS RANGE. *J. Elisha Mitchell Sci. Soc.* 86(3): 139-145, 1 fig. Fall 1970. *WR 140: 155*
[Colo. State Univ., Fort Collins.] Studies of *Bonasa umbellus* made in Macon County, N.C., during 1968 and 1969.

Höglund, Nils, Göran Nilsson, and Finn Stålfelt. ANALYSIS OF A TECHNIQUE FOR ESTIMATING WILLOW GROUSE *(LAGOPUS LAGOPUS)* DENSITY. *VIII Intern. Congr. Game Biol.* p. 156-159. 1970. In English with Russian summ. *WR 140: 155*
[Boda Bruk, Enånger, Sweden.]

Höglund, Nils H. ON THE ECOLOGY OF THE WILLOW GROUSE *(LAGOPUS LAGOPUS)* IN A MOUNTAINOUS AREA IN SWEDEN. *VIII Intern. Congr. Game Biol.* p. 118-120. 1970. In English with Russian summ. *WR 140: 155*
[Boda Bruk, Enånger, Sweden.]

Jenkins, David, and Adam Watson. POPULATION CONTROL IN RED GROUSE AND ROCK PTARMIGAN IN SCOTLAND. *VIII Intern. Congr. Game Biol.* p. 121-141, 14 figs. 1970. In English with Russian summ. *WR 140: 155*
[Nature Conservancy, 12 Hope Terrace, Edinburgh, Scotland.]

Joensen, Anders Holm. THE PAST AND PRESENT STATUS OF BLACK GROUSE *(LYRURUS TETRIX)* IN DENMARK. *VIII Intern. Congr. Game Biol.* p. 160-163, 1 fig. 1970. In English with Russian summ. *WR 140: 155*
[Game Biol. Sta., Kalø, Rønde, Denmark.]

Kirikov, S. [ECOLOGICAL FEATURES OF BLACK GROUSE POPULATION IN ITS SOUTHERN AREA OF OCCURRENCE BETWEEN THE VOLGA AND THE URAL.] *VIII Intern. Congr. Game Biol.* p. 173-176. 1970. In Russian with English summ. *WR 140: 156*
[Inst. Geogr., Moscow, USSR.]

Kirikov, S. ECOLOGICAL FEATURES OF CAPERCAILLIE POPULATIONS IN THE SOUTHERN PARTS OF ITS AREA OF OCCURRENCE (THE TERRITORY BETWEEN THE VOLGA AND THE URAL). *VIII Intern. Congr. Game Biol.* p. 164-168. 1970. In English with Russian summ. *WR 140: 156*
[Inst. Geogr., Moscow, USSR.]

Klaus, Siegfried, Frank Vogel, and Jochen Wiesner. EIN BEITRAG ZUM AUAR-WILDPROBLEM IM ELBSANDSTEINGEBIRGE I. CHARAKTERISTIK EINES BALZPLATZES. [THE TETRAONID PROBLEM IN THE ELBE SANDSTONE HILLS I. CHARACTERIZATION OF A MATING RANGE.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 29: 103-118, illus. 1967/1968. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 156*

Klebenow, Donald A. SAGE GROUSE VERSUS SAGEBRUSH CONTROL IN IDAHO. *J. Range Mgmt.* 23(6): 396-400, 1 fig. Nov. 1970. *WR 140: 156*
[Texas Tech. Univ., Lubbock.] Highlight: Spraying with herbicides to control sagebrush was detrimental to nesting grouse and to sage grouse broods. Nesting ceased when one area was sprayed and another contained a nest five years after spraying. Broods were less affected. One area contained broods three years after it had been sprayed, but variation existed from one area to the next, for another that was sprayed in 1962 was not being used in 1966.

Lance, A. N., F. C. Zwickel, F. A. Gornall, and J. F. Bendell. DIET AND MORTALITY OF YOUNG BLUE GROUSE RAISED IN CAPTIVITY. *J. Wildl. Mgmt.* 34(3): 653-655, 1 fig. July 1970. *WR 140: 156*
[Nature Conservancy, Banchory, Scotland.] Abstract: Blue grouse *(Dendragapus obscurus)* obtained from the wild as eggs or young less than a week old (N=139) were raised in captivity. The diet consisted of chopped lettuce, hard-boiled egg, and commercial Turkey Poult Crumbles only. Captive grouse grew as well as birds in the wild. Newly-hatched chicks ate immediately and unaided when food was scattered beneath their feet. Heavy mortality occurred in certain years even though the chicks received the same diet that produced good survival in other years. This mortality may not necessarily be the same as that caused by a loss of vigor among young bred from captive parents.

Lance, A. N. MOVEMENTS OF BLUE GROUSE ON THE SUMMER RANGE. *Condor* 72(4): 437-444, 1 fig. Oct. 1970. *WR 140: 156*
[Nature Conservancy, Banchory, Scotland.] *"Dendragapus obscurus."*--Courtesy/ Paul A. Stewart.

Lewis, John B. RUFFED GROUSE: AN INDICATOR OF ENVIRONMENTAL CHANGE. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 196-204, 1 fig. 1970. *WR 140: 156*
[Mo. Dept. Conserv., Columbia.]

Liscinsky, Steve. A FIVE-YEAR REPORT ON PENNSYLVANIA'S GROUSE HUNTING SURVEY--1965-1969. *Pa. Game News* 41(11): 45-47, 1 fig. Nov. 1970. *WR 140: 156*
[Pa. Game Comm., Harrisburg.] Grouse hunters took about equal advantage of the time available in each of the three seasons. Flushing rates and percentages of grouse shot at did not vary significantly between seasons.

Marques Mendes, Luis Fernando. ALGUNS MALOFAGOS DA PERDIZ CINZENTA. [SOME MALLOPHAGA OF THE PORTUGUESE GREY PARTRIDGE.] *Direcção-Geral Servicos Florestais & Aquícolas, Estudos & Divulgação Téch. - Grupo A.* 23 p., 5 figs. 1970. In Portuguese with French and English summ. *WR 140: 156*
"Perdix p. hispaniensis."

XUM

Moss, R. PROBABLE LIMITING NUTRIENTS IN THE MAIN FOOD OF RED GROUSE *(LAGOPUS LAGOPUS SCOTICUS)*. In: K. Petrusewicz, editor. *Secondary Productivity of Terrestrial Ecosystems* (Warsaw). p. 369-379. 1967. [From Ibis 112(1), 1970.] *WR 140: 157*

Myrberget, Svein. REPRODUCTIVE SUCCESS OF YOUNG AND OLD WILLOW PTARMIGAN, *LAGOPUS LAGOPUS LAGOPUS*, IN NORTH NORWAY. *VIII Intern. Congr. Game Biol.* p. 169-172. 1970. In English with Russian summ. *WR 140: 157*
[Statens Viltundersøkelser, Vollebekk, Norway.]

Pendergast, B. A., and D. A. Boag. SEASONAL CHANGES IN DIET OF SPRUCE GROUSE IN CENTRAL ALBERTA. *J. Wildl. Mgmt.* 34(3): 605-611. July 1970. *WR 140: 157*
[Box 75, Mukono, Uganda.] Abstract: The annual diet of spruce grouse *(Canachites canadensis)*, in the Swan Hills of west-central Alberta, was analyzed by studying crop contents of 99 adult and 65 juvenile birds. When snow covered the forest floor, grouse were virtually monophagous, selecting needles of *Pinus contoria* despite almost equal availability of both *Abies* spp. and *Picea* spp. At other times of the year, the diet was mainly from plants growing on the forest floor with the fruits of *Vaccinium* spp. being the most important. The diet of juveniles differed from that of adults in showing greater diversity and greater relative proportions of arthropods and fruit. By comparing foods available with those consumed, it was apparent that this population of spruce grouse was selective in its feeding habits throughout the year and probably never faced food shortages.

Peterson, Joel. GONE WITH THE SAGE. *Mont. Outdoors* 5(9): 1-3, [3 figs.]. Sept. 1970. *WR 140: 157*
In one study area, approximately 49% of the original stand of sagebrush has been destroyed. Sage grouse populations have declined steadily.

Pirkola, Matti K., and Ilkka Koivisto. THE MAIN STAGES OF THE DISPLAY OF THE CAPERCAILLIE AND THEIR PHENOLOGY. *VIII Intern. Congr. Game Biol.* p. 177-184, 3 figs. 1970. In English with Russian summ. *WR 140: 157*
[State Game Res. Inst., Helsinki, Finland.]

Potts, G. R. RECENT CHANGES IN THE FARMLAND FAUNA WITH SPECIAL REFERENCE TO THE DECLINE OF THE GREY PARTRIDGE. *Bird Study* 17(2): 145-166, 5 figs. June 1970. *WR 140: 157*
[The Game Conservancy, Washington, Sussex, England.] The decline of the grey partridge seems correlated with the decline of three groups of arthropods upon which young chicks are fed.

Pulliainen, Erkki. COLOUR VARIATION AND SEX IDENTIFICATION IN THE ROCK PTARMIGAN *(LAGOPUS MUTUS)* IN FINLAND. *Ann. Acad. Sci. Fenn. Ser. A IV Biol.* 160: 1-6, illus. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 157*
[Univ. Helsinki, Helsinki, Finland.]

Pulliainen, Erkki. METSON TALVIRAVINNON VALINNASTA JA KOOSTUMUKSESTA. [COMPOSITION AND SELECTION OF WINTER FOOD BY THE CAPERCAILLIE *(TETRAO UROGALLUS)* IN NORTHEASTERN FINNISH LAPLAND.] *Suomen Riista* 22: 67-73. 1970. In Finnish with English summ. *WR 140: 157*

Rajala, Paavo. ÜBER DIE TETRAONIDENBESTÄNDE IN FINNLAND NACH SCHÄTZUNGEN GEGEN ENDE DER BRUTZEIT IN DEN JAHREN 1963-65. [ON THE STATUS OF TETRAONIDS IN FINLAND BASED ON BREEDING SEASON ESTIMATES FOR THE YEARS 1963-65.] *VII Intern. Congr. Game Biol.* p. 397-402, 3 figs. 1967. In German with Russian summ. *WR 140: 157*
[State Game Res. Inst., Helsinki, Finland.]

Rajala, Paavo. METSÄKANALINTUKANNAT ELOKUUSA 1969 REITTIARVIOINTIEN MUKAAN. [FINNISH TETRAONID POPULATIONS IN AUGUST 1969 ACCORDING TO ROUTE CENSUS.] *Suomen Riista* 22: 131-139, 7 figs. 1970. In Finnish with English summ. *WR 140: 158*

Reydellet, Maurice. LES TÉTRAS EN FRANCE. [GROUSE IN FRANCE.] *VIII Intern. Congr. Game Biol.* p. 185-190, 1 fig. 1970. In French with Russian summ. *WR 140: 158*
[35 Rue Carnot, Gap, France.] *"Tetrao urogallus, Lyrurus tetrix tetrix, Lagopus mutus,* and *Tetrastes bonasia rupestris."*

Rogers, Glenn E. THE SHARP-TAILED GROUSE IN COLORADO. *Colo. Div. Game, Fish & Parks Tech. Publ.* no. 23. viii + 94 p., 24 figs., 40 maps. Nov. 1969. Price $1.00. *WR 140: 158*
[Colo. Div. Game, Fish & Parks, Denver.] A survey of existing populations of sharp-tailed grouse was taken during 1962-65. Habitat, breeding season, method of censusing, brood season, harvest, and density are discussed. Forty dancing grounds were located during the study; accurate counts of displaying males were extremely difficult.

Schemnitz, Sanford D. FALL AND WINTER FEEDING ACTIVITIES AND BEHAVIOR OF RUFFED GROUSE IN MAINE. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 127-140, 1 fig. 1970. *WR 140: 158*
[Maine Coop. Wildl. Res. Unit, Orono.]

Schladweiler, Philip, Thomas W. Mussehl, and Robert J. Greene. AGE DETERMINATION OF JUVENILE BLUE GROUSE BY PRIMARY DEVELOPMENT. *J. Wildl. Mgmt.* 34 (3): 649-652. July 1970. *WR 140: 158*
[Mont. Fish & Game Dept., Bozeman.] Abstract: A technique for age determination of young Montana blue grouse *(Dendragapus obscurus pallidus)* based on measurements of actively growing juvenal and postjuvenal primary feathers of 17 pen-raised birds is described. When tested on 87 approximate known-age wild birds to 16 weeks, 95% of 116 determinations were within 1 week of the expected age. Supplemental characters for aging juveniles in the field are presented.

Semenov-Tyan-Shanskii, Oleg. SOME TRENDS IN ECOLOGICAL RESEARCH ON TETRAONIDS IN RUSSIAN RESERVES. *VIII Intern. Congr. Game Biol.* p. 142-145, 2 figs. 1970. In English with Russian summ. *WR 140: 158*
[Lapland Reserve, Mončegorsk, Murmansk, USSR.]

Stirling, Ian, and J. F. Bendell. THE REPRODUCTIVE BEHAVIOUR OF BLUE GROUSE. *Syesis* 3: 161-171, 16 figs. 1970. *WR 140: 158*
[Mawson Inst. Antarctic Res., Adelaide, Australia.]

Vizeu Pinheiro, Maria Fernanda. ALGUMAS CONSIDERACÕES SOBRE A EVOLUCÃO DUMA POPULACÃO DE PERDIZ VERMELHA *ALECTORIS RUFA HISPANICA* SEOANE. [SOME CONSIDERATIONS UPON THE EVOLUTION OF A POPULATION OF PORTUGUESE RED PARTRIDGES *(ALECTORIS RUFA HISPANICA).*] *Direcção-Geral Servicos Florestais & Aquicolas, Estudos & Divulgação Têch.-Grupo A.* 20 p., 11 figs. 1970. In Portuguese with French and English summ. *WR 140: 158*

Vizeu Pinheiro, Maria Fernanda. CONTRIBUICÃO PARA O ESTUDO EM PORTUGAL DA ALIMENTACÃO DA PERDIZ VERMELHA *ALECTORIS RUFA HISPANICA* SEOANE. [CONTRIBUTION TO THE STUDY IN PORTUGAL OF THE FOOD HABITS OF THE RED PARTRIDGE *(ALECTORIS RUFA HISPANICA)* IN PORTUGAL.] *Direcção-Geral Servicos Florestais & Aquicolas, Estudos & Divulgação Têch.-Grupo A.* 24 p., 3 figs. 1970. In Portuguese with French and English summ. *WR 140: 158*

XUM

GROUSE, PARTRIDGE, ETC.--Continued

Volkov, N. I. [ONE OF THE WINTER FEEDING CONDITIONS OF WHITE GROUSE.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 75(1): 123-127. 1970. [From Biol. Abstr. 51(17), 1970. In Russian with English summ.] *WR 140: 159*

Wiltowski, Janusz. ROZMIESZCZENIE I LICZEBNOSC JARZABKA *TETRASTES BONASIA* (LINNAEUS, 1758) (AVES) W POLUDNIOWEJ POLSCE W ROKU 1966. [THE DISTRIBUTION AND ABUNDANCE OF THE HAZEL HEN *TETRASTES BONASIA* (LINNAEUS, 1758) (AVES) IN SOUTHERN POLAND IN 1966.] *Acta Zool. Cracov.* 13(11): 265-276. 1968. [From Biol. Abstr. 51(24), 1970. In Polish with Russian and English summ.] *WR 140: 159*
[Zakl. Zool. Syst., Cracow, Poland.]

TURKEY

Busch, Robert H., and Lovett E. Williams, Jr. CASE REPORT--A MAREK'S DISEASE-LIKE CONDITION IN FLORIDA TURKEYS. *Avian Diseases* 14(3): 550-554, 3 figs. Aug. 1970. *WR 140: 159*
[Univ. Fla., Gainesville.] Summary: Two wild turkeys *(Meleagris gallopavo osceola)*, in poor physical condition, were hand-caught and necropsied for diagnosis. Distribution of lesions and cell types in the lesions of both specimens resembled Marek's disease (MD) as seen in chickens.

Donohoe, Robert W., and Charley McKibben. THE WILD TURKEY IN OHIO. *Ohio Game Monographs* no. 3. vi + 32 p., 11 figs. Mar. 1970. *WR 140: 159*
[Ohio Dept. Nat. Resources, Columbus.] Abstract: The wild turkey *(Meleagris gallopavo)* once inhabited the entire state of Ohio. Several factors led to its extinction, reported in 1904. In 1952 the Division of Wildlife began a concerted effort to restore the turkey to Ohio. Between 1952 and 1957, 1400 game farm turkeys were reared at the Waterloo Wildlife Experiment Station and released in several large forest areas. Field investigations showed that these releases were not successful. Transplantings from states having wild turkey populations were initiated in 1956 and continued through 1963. This program, together with the instate trapping and transplanting operation, has been responsible for the re-establishment of the wild turkey in all of Ohio's major forestlands. A total of 87 turkey gobblers (77 adults and 10 immatures) have been killed during four spring hunts (1966-1969). The ratio of one successful hunter to 26 unsuccessful hunters compares favorably with ratios from other turkey states. The future of turkey hunting in Ohio is discussed. Habitat requirements of the wild turkey are reviewed, and habitat management guidelines are given to ensure that the turkey will remain a part of the Ohio fauna.

Eaton, Stephen W. PRIMARY MOLT IN ADULT MALE *MELEAGRIS GALLOPAVO SILVESTRIS*. *Auk* 87(4): 794. Oct. 1970. *WR 140: 159*
[St. Bonaventure Univ., St. Bonaventure, N.Y.] The molt continued over a period of six months.--Courtesy/ Paul A. Stewart.

Eaton, Stephen W., Terry L. Moore, and E. Neil Saylor. A TEN YEAR STUDY OF THE FOOD HABITS OF A NORTHERN POPULATION OF WILD TURKEYS. *Sci. Studies* 26: 43-64, 2 figs. 1970. *WR 140: 159*
[St. Bonaventure Univ., St. Bonaventure, N.Y.] Four commonly used mast species were beechnuts, wild black cherry, red oak and white ash. A summary of the seasonal change in food habits shows the birds eating herbaceous tubers and blossoms in the spring and turning to sedge and grass seeds as they ripen in summer. There is a rather sudden shift to mast in September and insects may be eaten in large quantities in October. As long as mast is readily available in fall and winter they will concentrate on this food but can subsist on the emergency ration. There is a return to mast as the snow pack melts and then the shift to tubers as the mast germinates and to small seeds as they ripen.--From summ.

TURKEY--Continued

Frank, Harry. ÜBER DIE EINBÜRGERUNG VON WILDPUTEN. [ON THE INTRODUCTION OF THE WILD TURKEY.] *VIII Intern. Congr. Game Biol.* p. 382-386. 1970. In German with Russian summ. *WR 140: 160*

Hillestad, Hilborn O. MOVEMENTS, BEHAVIOR AND NESTING ECOLOGY OF THE WILD TURKEY IN EAST CENTRAL ALABAMA. *M.S. thesis, Auburn Univ.* 70 p. 1970. *WR 140: 160*

Moore, Terry L. THE SUMMER FOOD HABITS OF THE WILD TURKEY ON THE HIGH PLATEAU. *M.S. thesis, St. Bonaventure Univ.* 50 p. 1967. *WR 140: 160*

Saylor, E. Neil. THE OCTOBER FOOD HABITS OF THE EASTERN WILD TURKEY *(MELEAGRIS GALLOPAVO SYLVESTRIS)* IN SOUTHWESTERN NEW YORK STATE. *M.S. thesis, St. Bonaventure Univ.* 55 p. 1967. *WR 140: 160*

Taylor, James Hubert. A TELEMETRIC STUDY OF THE MOVEMENTS OF WILD TURKEY ON JACKSON-BIENVILLE WILDLIFE MANAGEMENT AREA, LOUISIANA. *M.S. thesis, La. State Univ.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16 (3): 368-384. 1970.) *WR 140: 160*

Thomas, Jack Ward. SEASONAL SHIFTS IN RANGE BY THE RIO GRANDE TURKEY. *M.S. thesis, W. Va. Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 160*

Watts, Charles Robert. THE SOCIAL ORGANIZATION OF WILD TURKEYS ON THE WELDER WILDLIFE REFUGE, TEXAS. *Ph.D. thesis, Utah State Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 160*

DOVES & PIGEONS

Barus, Vlastimil. RESUMEN SOBRE LA FAUNA DE LOS NEMATODOS EN LAS AVES DEL ORDEN COLUMBIFORMES EN CUBA. [SUMMARY OF THE NEMATODE FAUNA OF THE COLUMBIFORMES OF CUBA.] *Torreia* (Nueva Ser.) no. 19. p. 3-16, 2 figs. 25 Dec. 1970. In Spanish. *WR 140: 160*
[Inst. Parasitol., Acad. Sci., Czechoslovakia.] Annotated list of 7 spp. of nematodes parasitizing columbiform birds.

Beck, J. R. FOOD MOULT AND AGE OF FIRST BREEDING IN THE CAPE PIGEON, *DAPTION CAPENSIS* LINNAEUS. *British Antarctic Surv. Bull.* 21: 33-44, illus. 1969. [From Biol. Abstr. 51(17), 1970.] *WR 140: 160*
[British Antarctic Surv., London, England.]

Becker, Kurt. DIE GEGENWARTIGE SITUATION IN DER BESTANDSREGELUNG VERWILDERTER HAUSTAUBEN. [THE PRESENT SITUATION IN THE POPULATION REGULATION OF FERAL PIGEONS.] *Angew. Ornithol.* 3(2): 83-88. 1968. [From Biol. Abstr. 51(16), 1970. In German with French and English summ.] *WR 140: 160*
[Correnplatz 1, Berlin, Germany.]

Blankenship, Lytle H., and Henry M. Reeves. MOURNING DOVE RECOVERIES FROM MEXICO. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 135. iv + 25 p., 2 figs. July 1970. *WR 140: 160*
[Migratory Bird Populations Sta., Laurel, Md.] Of 37,000 reports of mourning dove band recoveries in the files of the Migratory Bird Populations Station on October 30, 1967, 1,120 came from Mexico, and half of those were from Jalisco and Michoacan, both in west-central Mexico; Jalisco alone accounted for nearly a third. Few recoveries were reported from the area between the U.S. border and mid-Mexico. Depending upon actual band reporting rates and the

representativeness of the banding data analyzed, the Mexican dove harvest may equal or exceed harvests in leading U.S. states. Factors influencing band reporting rates (the proportions of banded birds taken by hunters that are reported) must be resolved before Mexico's importance as a harvest area can be accurately determined.--From abstr.

Blankinship, David R. WHITE-WINGED DOVE NESTING COLONIES IN NORTHEASTERN MEXICO. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 171-182. 1970. *WR 140: 161*
[Texas A&M Univ., College Station.] *"Zenaida asiatica asiatica."*

Brown, N. Sandra. EYE LENS WEIGHTS AS INDICATORS OF AGE IN ROCK DOVES. *J. Wildl. Mgmt.* 34(3): 656-657. July 1970. *WR 140: 161*
[Simmons Coll., Boston, Mass.] Abstract: Variation in eye lens weights of 45 known-age rock doves *(Columba livia)* and 92 rock doves collected over a 15-month period indicated that lens weights could be used to estimate age only in nestlings and early juveniles. Little, if any, increase in lens weight was apparent after the first 112 days.

Corballis, M. C., and I. L. Beale. MONOCULAR DISCRIMINATION OF MIRROR-IMAGE OBLIQUES BY PIGEONS: EVIDENCE FOR LATERALIZED STIMULUS CONTROL. *Animal Behaviour* 18(3): 563-566. Aug. 1970. *WR 140: 161*
[McGill Univ., Montreal, Quebec, Canada.] Summary: Three pigeons were trained monocularly to peck a key when it displayed an oblique line sloping at 135° (S+) but not when it displayed the lateral mirror-image sloping at 45° (S-). When tested with the untrained eye open the birds generally favoured S-, although the preference was rather small. Transfer tests with the trained eye open showed that the original discrimination was controlled primarily by cues on the side of the key towards the seeing eye, and that the main cue was an up-down one.

Frith, C. B. NESTS AND EGGS OF THE AUSTRALIAN ROCK PIGEONS *PETROPHASSA* SPP. *Emu* 70(1): 29-30 + 1 pl. Mar. 1970. *WR 140: 161*
[British Mus., Cromwell Rd., London, England.] *"P. albipennis* and *P. rufipennis."*

Graue, Louis C. ORIENTATION AND DISTANCE IN PIGEON HOMING *(COLUMBA LIVIA)*. *Animal Behaviour* 18(1): 36-40, 2 figs. Feb. 1970. *WR 140: 161*
[Bowling Green State Univ., Bowling Green, Ohio.] To study the role of distance in the initial orientation of homing pigeons, eight release sites around Bowling Green, Ohio were selected from 8 km to 320 km distance in each of the four cardinal compass directions. The results indicated no intermediate zone of poor initial orientation. The experiments showed fundamental differences in homing behavior which could not be attributed to the stock or methods and must have involved loft site and release point connected factors.

Hutchison, J. B. CHANGES IN HYPOTHALAMIC RESPONSIVENESS TO TESTOSTERONE IN MALE BARBARY DOVES *(STREPTOPELIA RISORIA)*. *Nature* 222: 176-177. 1969. [From Ibis 112(4), 1970.] *WR 140: 161*
[Univ. Cambridge, Cambridge, England.]

Hutchison, J. B. DIFFERENTIAL EFFECTS OF TESTOSTERONE AND OESTRADIOL ON MALE COURTSHIP IN BARBARY DOVES *(STREPTOPELIA RISORIA)*. *Animal Behaviour* 18(1): 41-51, 7 figs. Feb. 1970. *WR 140: 161*
[Univ. Cambridge, Cambridge, England.] Experience of association with females does not appear to be the only variable involved in this developmental change, since successive daily interactions with females did not induce nest soliciting in castrates whose pre-castration courtship had lacked this behavior. Testosterone failed to induce nest soliciting in males whose pre-castration courtship lacked this pattern, but re-established courtship at pre-castration levels in males that had displayed this pattern prior to castration. In contrast, oestradiol induced the display of nest soliciting in all castrates irrespective of precastration courtship.--From summ.

Keeton, William T. COMPARATIVE ORIENTATIONAL AND HOMING PERFORMANCES OF SINGLE PIGEONS AND SMALL FLOCKS. *Auk* 87(4): 797-799. Oct. 1970. *WR 140: 162*
[Cornell Univ., Ithaca, N.Y.] Orientation was as accurate and homing as quick in individuals as in groups.--Courtesy/ Paul A. Stewart.

Keeton, William T. DO PIGEONS DETERMINE LATITUDINAL DISPLACEMENT FROM THE SUN'S ALTITUDE? *Nature* 227(5258): 626-627, 1 fig. 8 Aug. 1970. *WR 140: 162*
[Cornell Univ., Ithaca, N.Y.]

Keeton, W. T., and A. Gobert. ORIENTATION BY UNTRAINED PIGEONS REQUIRES THE SUN. *Proc. Natl. Acad. Sci.* 65: 853-856. 1970. [From Auk 87(4), 1970.] *WR 140: 162*
[Cornell Univ., Ithaca, N.Y.]

Keppie, Daniel M., Howard M. Wight, and W. Scott Overton. A PROPOSED BAND-TAILED PIGEON CENSUS--A MANAGEMENT NEED. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 157-171, 3 figs. 1970. *WR 140: 162*
[Univ. Alberta, Edmonton, Alberta, Canada.] *"Columba fasciata."*

Kocan, R. M., and J. O. Knisley. CHALLENGE INFECTION AS A MEANS OF DETERMINING THE RATE OF DISEASE RESISTANT *TRICHOMONAS GALLINAE*-FREE BIRDS IN A POPULATION. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 13-15. Jan. 1970. *WR 140: 162*
[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: *Trichomonas gallinae*-free pigeons and mourning doves were infected with the Jones' Barn strain of *T. gallinae* to determine the rate of disease resistant *T. gallinae*-free birds in each population. Although all birds became infected 88% of the pigeons were resistant to trichomoniasis while 82% of the mourning doves were resistant. It was concluded that these birds had been previously infected and spontaneously lost their trichomonad fauna while retaining their resistance to fatal infection.

Kocan, Richard M., and Carlton M. Herman. SERUM PROTEIN CHANGES IN IMMUNE AND NONIMMUNE PIGEONS INFECTED WITH VARIOUS STRAINS OF *TRICHOMONAS GALLINAE*. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 43-47, 1 fig. Jan. 1970. *WR 140: 162*
[Patuxent Wildl. Res. Center, Laurel, Md.] It was concluded that tissue invasion by the parasite was necessary to evoke a quantitative change in serum protein concentrations.--From abstr.

Miselis, Richard, and Charles Walcott. LOCOMOTOR ACTIVITY RHYTHMS IN HOMING PIGEONS *(COLUMBA LIVIA)*. *Animal Behaviour* 18(3): 544-551, [2] figs. + 1 pl. Aug. 1970. *WR 140: 162*
[Univ. Pa., Philadelphia.] Homing pigeons in constant conditions at very low light intensities exhibit circadian activity rhythms. The accuracy of the control of period length is not in the range of precision required for sun based bicoordinate navigation. It would be adequate for sun compass orientation. Observations of locomotor activity in natural conditions did not indicate any naturally occurring signals which could provide an accurate time base.--From summ.

Popi, F., and L. Pardi. ARE PIGEONS ABLE TO HOME WHEN RELEASED OVER THE SEA? *Monitori Zool. Italiano* 2(3-4): 217-231. 1968. [From Bird-Banding 41 (3), 1970, from Referat. Zhur. 1969(12): Aves 71.] *WR 140: 162*

Ruos, James L. MOURNING DOVE STATUS REPORT, 1969. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 132. iv + 35 p. Apr. 1970. For sale by Supt. Documents at 45¢. *WR 140: 162*
[Migratory Bird Populations Sta., Laurel, Md.] U.S. mourning dove population indexes declined from 1968 to 1969 by 2% in the Eastern Management Unit and 8% in the Central Management Unit, but remained unchanged in the Western Management Unit. The changes were not statistically significant. The 1969

indexes were the lowest in the 11-year period 1959-69 and were below the 10-year means, 1959-69, by 8% in the Eastern Unit, 15% in the Central, and 21% in the Western. For the three units combined, the 1969 index was 5% below that for 1968 and 15% below the 10-year mean.--From abstr.

Sadler, Kenneth C., Roy E. Tomlinson, and Howard M. Wight. PROGRESS OF PRIMARY FEATHER MOLT OF ADULT MOURNING DOVES IN MISSOURI. *J. Wildl. Mgmt.* 34(4): 783-788, 4 figs. Oct. 1970. *WR 140: 163*

[Mo. Dept. Conserv., Columbia.] Abstract: The examination of 7,892 adult doves in Missouri between 1953 and 1965 showed that less than 2.5% of adult doves completed their molt before October 1. Adult doves of both sexes began molting their primary feathers during early June in Missouri and lost the last (tenth) primary during the latter half of October. Approximately 140-150 days were required to complete the molt. Thus, early-hatched immatures, which begin their primary molt 25-30 days after hatching, contributed the bulk of the wings with completed molts in September. By correctly classifying September samples of dove wings with a completed molt as young-of-the-year a more accurate young:adult ratio is obtained.

Schortemeyer, J. L., and S. L. Beckwith. CHEMICAL CONTROL OF PIGEON REPRODUCTION. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 47-55. 1970. *WR 140: 163*

[Univ. Fla., Gainesville.] "With Ornitrol (20,25-diazocholesterol dihydrochloride)."

Sileo, Louis, Jr., and E. Lee Fitzhugh. INCIDENCE OF TRICHOMONIASIS IN THE BAND-TAILED PIGEONS OF SOUTHERN ARIZONA. *Bull. Wildl. Disease Assoc.* 5(3): 146. July 1969. *WR 140: 163*

[Univ. Ariz., Tucson.] "The disease is probably not an important mortality factor in band-tailed pigeon populations at present."

Sileo, Louis, Jr. THE INCIDENCE AND VIRULENCE OF *TRICHOMONAS GALLINAE* (RIVOLTA) IN MOURNING DOVE *(ZENAIDURA MACROURA*, LINNAEUS*)* POPULATIONS IN SOUTHERN ARIZONA. *Ph.D. thesis, Univ. Ariz.* 34 p. 1970. *WR 140: 163*

Slade, Norman Andrew. FACTORS AFFECTING MOURNING DOVE USE OF WATER IN ARTIFICIAL CATCHMENT BASINS IN A DRYLAND FARMING AREA OF UTAH. *M.S. thesis, Utah State Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 163*

Sturtevant, Joan, and B. C. Wentworth. EFFECT ON ACCEPTABILITY AND FECUNDITY TO PIGEONS OF COATING SC 12937 BAIT WITH ZEIN OR ETHOCEL. *J. Wildl. Mgmt.* 34(4): 776-782, 4 figs. Oct. 1970. *WR 140: 163*

[JaLabs, Box 662, Monroe, Maine.] Abstract: Pigeons *(Columba livia)* fed 0.1% SC 12937-treated corn coated with Zein or Ethocel over a 10-day period ate only about one-half that eaten by birds fed untreated corn. Dosage was approximately 0.16 gm SC 12937 per bird. When offered a choice between treated corn coated with Zein and corn that had not been treated or coated, the average daily intake per pair was only 2.3 gm of the treated Zein-coated corn but 44.5 gm of the control corn. The maximum weight loss in the pigeons, due to bait refusal, during the 10-day treatment period was 28%. Results of blood analyses and fecundity data support the findings of other researchers that SC 12937 is a debilitating agent rather than a chemosterilant. Transaminase and buffy layer values of treated birds increased during treatment and remained high for most of the 160-day experiment period. Depressed fertility occurred for 3 months in the Zein group and 5 months in the Ethocel group, while fertility of pigeons with a choice of food was normal. Mean clutch size was not depressed in any group, but number of one-egg clutches increased during the first 4 months in the Zein group. Four treated birds died during the experiment; at autopsy, internal anatomical abnormalities were found in the majority of Zein and Ethocel

group birds. Neither Zein nor Ethocel coating increased acceptability of SC 12937-treated corn by pigeons, and pigeons with no choice of food other than SC 12937-treated corn become physically debilitated, thereby reducing reproductivity.

Sturtevant, Joan. MESTRANOL AS A CHEMOSTERILIZING AGENT FOR PIGEON POPULATION CONTROL: POTENTIALITIES AND LIMITATIONS. *Ph.D. thesis, Univ. Mass.* 72 p. 1970. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 164*

Sturtevant, Joan. PIGEON CONTROL BY CHEMOSTERILIZATION: POPULATION MODEL FROM LABORATORY RESULTS. *Science* 170(3955): 322-324, 1 fig. 16 Oct. 1970. *WR 140: 164*
[JaLabs, Box 662, Monroe, Maine.] Abstract: Reproductivity of pigeons is inhibited with mestranol incorporated in a synthetic grit; continual erosion releases daily doses. Young squabs may be permanently sterilized when fed crop milk by treated birds. A theoretical model of pigeon population dynamics using laboratory-obtained data shows the advantages of chemosterilization over killing as a means of pigeon control.

Wortis, R. P. THE TRANSITION FROM DEPENDENT TO INDEPENDENT FEEDING IN THE YOUNG RING DOVE. *Anim. Behav. Monogr.* 2(1). 54 p. 1969. [From Bird-Banding 41(2), 1970.] *WR 140: 164*

WATERFOWL

Anderson, Daniel W. PSEUDO-SLEEPING ATTITUDE IN LESSER SCAUP AND RING-NECKED DUCKS. *Condor* 72(3): 370-371, 1 fig. July 1970. *WR 140: 164*
[Univ. Wis., Madison.] *"Aythya affinis* and *A. collaris."*--Courtesy/ Paul A. Stewart.

Austin, George T. THE OCCURRENCE AND STATUS OF CERTAIN ANATIDS IN SOUTHERN NEVADA. *Condor* 72(4): 474. Oct. 1970. *WR 140: 164*
[Univ. Ariz., Tucson.] Annotated list of 11 spp.--Courtesy/ Paul A. Stewart.

Azhimuratov, Kh. [SEASONAL CHANGES OF A COOT BODY WEIGHT.] *Uzbek. Biol. Zhur.* 14(2): 51-53. 1970. [From Biol. Abstr. 51(23), 1970. In Russian with English summ.] *WR 140: 164*

Bagge, Pauli, Risto Lemmetyinen, and Tapio Raitis. SAARISTOMEREN VESILINTUJEN KEVÄTRAVINNOSTA. [OBSERVATIONS ON THE SPRING FOOD OF SOME DIVING WATERFOWL IN THE FINNISH ARCHIPELAGO SEA.] *Suomen Riista* 22: 35-45, 2 figs. 1970. In Finnish with English summ. *WR 140: 164*

Balát, František, and Čestmír Folk. DAS NISTEN UND DIE POPULATIONSDYNAMIK DER SCHNATTERENTE, *ANAS STREPERA*, IN DER TSCHECHOSLAWAKEI. [NESTING AND POPULATION DYNAMICS OF *ANAS STREPERA* IN CZECHOSLOVAKIA.] *Zool. Listy* 17(4): 327-340, illus. 1968. [From Biol. Abstr. 51(17), 1970. In German with English summ.] *WR 140: 164*
[Czech. Acad. Sci., Brno, Czechoslovakia.]

Balat, Frantisek. INCREASE IN WEIGHT OF FREE-LIVING MALLARDS *(ANAS PLATYRHYNCHOS)*, RESULTING FROM SUPPLEMENTARY FEEDING. *Zool. Listy* 18(4): 335-342, illus. 1969. [From Biol. Abstr. 51(16), 1970.] *WR 140: 164*
[Czech. Acad. Sci., Brno, Czechoslavakia.]

Barcak, C. [A CONTRIBUTION TO THE MIGRATING AND WINTERING WATERFOWL ON THE DANUBE IN THE VICINITY OF BRATISLAVA.] *Ochr. Fauny* 3: 87-93. 1969. [From Ibis 112(4), 1970. In Czech with English summ.] *WR 140: 164*

Barclay, John Scribner. ECOLOGICAL ASPECTS OF DEFENSIVE BEHAVIOR IN BREEDING MALLARDS AND BLACK DUCKS. *Ph.D. thesis, Ohio State Univ.* 188 p. 1970. [From Dissertation Abstr. Intern. 31(4B), 1970.] *WR 140: 165*

Barros Valenzuela, R. EL PATO CORTA CORRIENTES, *MERGANETTA ARMATA* GOULD. [THE TORRENT DUCK, *MERGANETTA ARMATA.*] *Anal. Acad. Chilena Ciencias Nat.* 30: 121-125. 1967. [From Auk 87(3), 1970. In Spanish.] *WR 140: 165*

Bartonek, James C., and H. W. Murdy. SUMMER FOODS OF LESSER SCAUP IN SUBARCTIC TAIGA. *Arctic* 23(1): 35-44, illus. 1970. [From Biol. Abstr. 51(22), 1970. In English with French and Russian summ.] *WR 140: 165*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] *"Aythya affinis."*

Bates, F. Y., D. M. Barnes, and J. M. Higbee. LEAD TOXICOSIS IN MALLARD DUCKS. *Bull. Wildl. Disease Assoc.* 4(4): 116-125, 5 figs. Oct. 1968. *WR 140: 165*
[Univ. Minn., St. Paul.] Abstract: Eight #6 lead pellets placed in the ventriculus of mallard drakes induced maturation arrest of promegaloblastic-like erythroid cells in the bone marrow, a hypochromic microcytic anemia with poikilocytosis in the peripheral blood, and acid-fast intranuclear inclusions in the renal proximal tubule cells.

Bellrose, Frank C., and Robert D. Crompton. MIGRATIONAL BEHAVIOR OF MALLARDS AND BLACK DUCKS AS DETERMINED FROM BANDING. *Ill. Nat. Hist. Surv. Bull.* 30 (3): 167-234, 25 figs. Sept. 1970. Available from Ill. Nat. Hist. Surv., Nat. Resources Bldg., Urbana. *WR 140: 165*
[Ill. Nat. Hist. Surv., Havana.] Large-scale banding of migratory ducks in the U.S. first occurred in Illinois. Banding records since 1922 have been compiled to determine: 1) the migration patterns as shown by band recoveries from mallards and black ducks, 2) the variation in migration patterns of mallards banded at various localities in the Mississippi Flyway, 3) the degree of variation in migration patterns of mallards from year to year, 4) the period of time mallards remain at a given area on the flyway, and 5) the chronology of migration in the mallard as shown by band recoveries.

Bevill, W. Vernon. EFFECTS OF SUPPLEMENTAL STOCKING AND HABITAT DEVELOPMENT ON ABUNDANCE OF THE MEXICAN DUCK. *M.S. thesis, N. Mex. State Univ.* 71 p. 1970. *WR 140: 165*
Four general habitat types, including open perimeter-surface type, closed perimeter-surface type, channelized potholes, and open channel type, were provided and pen-reared birds were released to supplement the remnant wild population. The size of the population increased in apparent response to these efforts. The open perimeter-surface type water areas provided habitat features important during the pre-breeding and breeding seasons. The closed perimeter-surface type was important during the post-breeding season. Channelized potholes served as brooding areas due to nearness of nesting cover, and open channels were used as waiting areas by breeding pairs. It was recommended that present habitat areas be further developed to enhance their overall value, and that additional areas be developed.--From abstr. Courtesy/ C. A. Davis.

Bishop, Richard A., and Robert Barratt. USE OF ARTIFICIAL NEST BASKETS BY MALLARDS. *J. Wildl. Mgmt.* 34(4): 734-738. Oct. 1970. *WR 140: 165*
[Iowa Conserv. Comm., Clear Lake.] Abstract: A total of 222 artificial nesting structures was placed on 11 state-owned marshes in 1964. During the first year, 26% of the structures on three selected areas were utilized by mallards *(Anas platyrhynchos)* and averaged 33% for the 6-year study. Hatching success of nests in baskets averaged 87% during the 6 years. An average clutch size of 9.9 was found in 205 successful nests and hatching success averaged 86%. Mallards readily adapted to these structures and would tolerate high nesting densities of up to 1 nest per 1.5 acres.

Bolen, Eric G., and John J. Beecham. NOTES ON THE FOODS OF JUVENILE BLACK-BELLIED TREE DUCKS. *Wilson Bull.* 82(3): 325-326. Sept. 1970. *WR 140: 166*
[Texas Technol. Univ., Lubbock.] Seeds of *Echinochloa colonum* were the chief food of five 21-day-old ducklings of *Dendrocygna autumnalis*.--Courtesy/ Paul A. Stewart.

Bowes, Mariette Anne LaBastille. THE LIFE HISTORY, ECOLOGY, AND MANAGEMENT OF THE GIANT PIED-BILLED GREBE *(PODILYMBUS GIGAS)*, LAKE ATITLÁN, GUATEMALA. *Ph.D. thesis, Cornell Univ.* 291 p. 1969. [From Dissertation Abstr. Intern. 31(1B), 1970.] *WR 140: 166*

Butterfield, W. K., and A. H. Dardiri. SEROLOGIC AND IMMUNOLOGIC RESPONSE OF WILD WATERFOWL VACCINATED WITH ATTENUATED DUCK PLAGUE VIRUS. *Bull. Wildl. Disease Assoc.* 5(2): 99-102. Apr. 1969. *WR 140: 166*
[Plum Island Animal Disease Lab., Greenport, Long Island, N.Y.] Herring gulls, Canada geese, and mallard ducks were orally vaccinated with attenuated duck plague virus and challenge inoculated with virulent virus. Herring gulls were unaffected by either virus. Geese did not produce antibody to attenuated virus and 11 of 12 died after immunity challenge. Mallard ducks were more resistant as 7 of 9 survived challenge inoculation with virulent virus. No correlation between mortality and antibody produced to attenuated virus vaccine could be observed.--From abstr.

Carnevale, Piero Mijno. ARTIFICIAL REARING AND HUNTING OF MALLARD. *VII Intern. Congr. Game Biol.* p. 389-392, 3 figs. 1967. In English with French summ. *WR 140: 166*
[Cascina Costa, Mortara (Pavia), Italy.]

Crissey, Walter F. AIMS AND METHODS OF WATERFOWL RESEARCH IN NORTH AMERICA. *VIII Intern. Congr. Game Biol.* p. 37-46, 3 figs. 1970. In English with Russian summ. *WR 140: 166*
[Migratory Bird Populations Sta., Laurel, Md.]

Dardiri, A. H., and P. Gailiunas. RESPONSE OF PEKIN AND MALLARD DUCKS AND CANADA GEESE TO EXPERIMENTAL INFECTION WITH DUCK PLAGUE VIRUS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 235-247, 9 figs. July 1969. *WR 140: 166*
[Plum Island Animal Disease Lab., P.O. Box 848, Greenport, N.Y.] Duck plague virus elicits comparable clinical and pathologic responses in domestic white Pekin ducks *(Anas platyrhynchos domesticus)*, wild mallard ducks *(Anas platyrhynchos)*, and Canada geese *(Branta canadensis)*. The antibody response was similar in both duck species. The mortality rate was high in Pekin ducks and Canada geese, while mallard ducks were more resistant. Pathologic changes were qualitatively comparable in all three waterfowl species.--From abstr.

Donahue, J. M., and L. D. Olson. SURVEY OF WILD DUCKS AND GEESE FOR *PASTEURELLA* SPP. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 201-205. July 1969. *WR 140: 166*
[Univ. Mo., Columbia.] *Pasteurella multocida* was not isolated from any of the 400 waterfowl or 37 feral pigeons. Two of the waterfowl had antibodies for *P. multocida*. *Pasteurella anatipestifer* was isolated from 4 of 50 Canada geese. Experimental inoculation of mallards *(Anas platyrhynchos)* demonstrated that they are susceptible to anatipestifer infection.--From abstr.

Drake, Samuel Orr, Jr. WINTER FOODS OF MALLARDS ON EUFAULA NATIONAL WILDLIFE REFUGE. *M.S. thesis, Auburn Univ.* 118 p. 1970. *WR 140: 166*

Fog, Jørgen. MORTALITY STUDIES OF RINGED MALLARDS. *VII Intern. Congr. Game Biol.* p. 181-189. 1967. In English with French summ. *WR 140: 166*
[Game Biol. Sta., Kalo, Denmark.]

XUM

Formozov, A. N. STEPPE LAKES AND WATERFOWL OF SOUTH-WEST SIBERIA AND NORTH KAZAKHSTAN. *VIII Intern. Congr. Game Biol.* p. 68-73, 3 figs. 1970. In English with Russian summ. *WR 140: 167*
[Inst. Geogr., Moscow, USSR.]

Franke, H. DIE PAARUNGSBALZ DES SCHWARZHALSTAUCHERS. [THE PAIRING BEHAVIOR OF THE BLACK-NECKED GREBE.] *J. Ornithol.* 110: 286-290. 1969. [From Ibis 112(3), 1970. In German with English summ.] *WR 140: 167*
"Podiceps nigricollis."

Friend, M., and D. O. Trainer. SEROLOGIC EVIDENCE OF NEWCASTLE DISEASE IN CAPTIVE MALLARDS AND SWANS. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(3): 130-135. July 1970. *WR 140: 167*
[Univ. Wis., Madison.] Abstract: Newcastle disease virus (NDV) hemagglutination inhibition (HI) antibody titers of 1:20 or greater were detected in 80 of 200 serums from adult female and 9 of 35 adult male mallard breeders tested from three commercial game farm flocks in Wisconsin and Illinois. Six of 106 serums from mallard ducklings also were considered to be reactors. Almost half (49) of 100 swan serums from five aviculturist flocks in Michigan had HI antibody titers of 1:20 or greater. The possible significance of these findings regarding waterfowl management practices was discussed.

Gauckler, A., and M. Kraus. ZUM VORKOMMEN UND ZUR BRUTBIOLOGIE DES SCHWARZHALSTAUCHERS *(PODICEPS NIGRICOLLIS)* IN NORDBAYERN. [ON THE DISTRIBUTION AND THE BREEDING BIOLOGY OF THE BLACK-NECKED GREBE *(PODICEPS NIGRICOLLIS)* IN NORTH BAVARIA.] *Anz. Ornithol. Ges. Bayern* 8: 349-364. 1968. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 167*

Gavrin, V. F. [ECOLOGICAL ASPECTS OF WATERFOWL MOULTING IN KAZAKHSTAN.] *VIII Intern. Congr. Game Biol.* p. 74-77. 1970. In Russian with English summ. *WR 140: 167*

Goethe, F. UNGEWÖHNLICHE WIEDERFUNDSORTE VERPFLANZTER DEUTSCHER BRANDGÄNSE *(TADORNA TADORNA).* [UNUSUAL MOVEMENTS OF TRANSPLANTED GERMAN SHELDUCKS, *TADORNA TADORNA.*] *Vogelwarte* 24: 187-189. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 167*

Gottschalk, John S., and Allan T. Studholme. WATERFOWL MANAGEMENT IN THE SEVENTIES. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 297-304. 1970. *WR 140: 167*
[Natl. Oceanic & Atmospheric Agency, US Dept. Commerce, Washington, D.C.]

Greij, Eldon Dean. PLUMAGE STUDIES OF THE BLUE-WINGED TEAL, *ANAS DISCORS* L. *Ph.D. thesis, Iowa State Univ.* 178 p. 1969. [From Dissertation Abstr. Intern. 30(11B), 1970.] *WR 140: 167*
Juvenal and adult plumage studies showed that developing plumages of adult male teal appear to be alternate unless the estrogen level is great enough to induce basic feathers. Adult female plumages seem to depend on the ratio of testosterone to estrogen. The patterned alternate plumage of females reflects high testosterone or low estrogen levels while the less patterned basic plumage appears to form under the influence of estrogen.

Grenquist, Pekka. VÄKÄKÄRSÄMATOJEN AIHEUTTAMASTA HAAHKOJEN KUOLLEISUUDESTA. [ON MORTALITY OF THE EIDER DUCK *(SOMATERIA MOLLISSIMA)* CAUSED BY ACANTHOCEPHALAN PARASITES.] *Suomen Riista* 22: 24-34, 3 figs. 1970. In Finnish with English summ. *WR 140: 167*

Grieb, Jack R., Howard D. Funk, Richard M. Hopper, George F. Wrakestraw, and Dale Witt. EVALUATION OF THE 1968-1969 EXPERIMENTAL MALLARD DRAKE SEASON IN MONTANA, WYOMING AND COLORADO. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 336-348. 1970. *WR 140: 167*
[Colo. Game, Fish & Parks Div., Fort Collins.]

Hancock, C. G., and P. J. Bacon. DIVING TIMES OF RED-NECKED GREBE. *British Birds* 63(7): 299-300. 1970. *WR 140: 168*
[Leighton Park School, Reading, Berkshire, England.] *"Podiceps grisegena."*

Harris, Hallett Jacob. SOME PHYSIOLOGICAL ASPECTS OF BREEDING BIOLOGY OF BLUE-WINGED TEAL. *Ph.D. thesis, Iowa State Univ.* 78 p. 1969. [From Dissertation Abstr. Intern. 30(11B), 1970.] *WR 140: 168*
The hypothesis that female waterfowl are subjected to stress as a result of reproduction was examined. The most rapid period of body weight loss occurred between laying of the 8th egg and day 5 incubation. Fifty-three percent of the weight lost during this period was attributed to involution of ovary and oviduct. A significant increase in blood nonprotein nitrogen, free fatty acid and glucose was found associated with a decrease in condition of incubating hens.

Harris, H. J., Jr. EVIDENCE OF STRESS RESPONSE IN BREEDING BLUE-WINGED TEAL. *J. Wildl. Mgmt.* 34(4): 747-755, 7 figs. Oct. 1970. *WR 140: 168*
[Univ. Wis., Green Bay.] Abstract: Blue-winged teal hens *(Anas discors)* were studied under natural conditions during the reproductive season of 1966 and 1967 to investigate the hypothesis that reproduction predisposes female waterfowl to stress-associated mortality. Physiological parameters were monitored during prelaying, laying, and incubation periods. A rapid loss in body weight was associated with the onset of incubation. The rate of loss was estimated to be 6.2 g/day from the time the 7th egg was laid until the 5th day of incubation; rate of weight loss declined after the 5th day of incubation. A quadratic response of plasma-free fatty acids was associated with declining condition of incubating hens while glucose and non-protein nitrogen increased linearly with declining condition. Acidophil levels were highest in incubating hens and lowest in prelaying hens. A gradual increase was observed over the reproductive period. Plasma-free amino acids and acetoacetate could not be correlated with declining condition of incubating hens. It is suggested that acidophilia and shifts in plasma constituents of incubating birds examined in this study are related to increased adrenal corticoid activity. It is further suggested that hypercortical adrenal (interrenal) activity is a response to energy demands accompanying reproduction.

Haukioja, Erkki, and Martti Soikkeli. SINISORSAN TALVEHTIMISESTA TURUN SEUDULLA. [WINTERING OF THE MALLARD *(ANAS PLATYRHYNCHOS)* IN THE VICINITY OF TURKU, SW FINLAND.] *Suomen Riista* 22: 119-130, 1 fig. 1970. In Finnish with English summ. *WR 140: 168*

Havlín, Jiří. BREEDING OF THE MALLARD *(ANAS PLATYRHYNCHOS)* ALONG THE STREAMS OF MEDIUM AND HIGHER ELEVATIONS IN CZECHOSLOVAKIA. *Zool. Listy* 17(4): 341-350, illus. 1968. [From Biol. Abstr. 51(17), 1970.] *WR 140: 168*
[Inst. Vertebr. Zool., Czech. Acad. Sci., Brno, Czechoslovakia.]

Hochbaum, H. Albert. WILDFOWLING AND THE LAW. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 313-326. 1970. *WR 140: 168*
[Delta Waterfowl Res. Sta., Delta, Manitoba, Canada.]

Hodson, Keith, and Mary Grimble. PARASITES FROM COMMON GOLDENEYE, GREATER SCAUP AND OLDSQUAW COLLECTED ON BOUNDARY BAY, B. C., FEBRUARY, 1970. *Blue Jay* 28(3): 125-126. Sept. 1970. *WR 140: 168*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Hoekstra, Hayo H. THE INTERNATIONAL WILDFOWL RESEARCH BUREAU. *VII Intern. Congr. Game Biol.* p. 201-204. 1967. In English. *WR 140: 168*
[Sta. Biol. de la Tour du Valat, Le Sambuc, France.]

Hofer, Josef. ZUR TAUCHTIEFE DES HAUBENTAUCHERS *PODICEPS CRISTATUS*. [THE DIVING DEPTH OF THE GREAT CRESTED GREBE *(PODICEPS CRISTATUS)*.] *Ornithol. Beob.* 66(1): 1-6. 1969. [From Biol. Abstr. 51(17), 1970. In German.] *WR 140: 169*

Hoffmann, Luc. RESEARCH ACTIVITIES OF THE INTERNATIONAL WILDFOWL RESEARCH BUREAU. *VIII Intern. Congr. Game Biol.* p. 47-49. 1970. In English with Russian summ. *WR 140: 169*
[Sta. Biol. de la Tour du Valat, Le Sambuc, France.]

Hunter, Brian F., William E. Clark, Patricia J. Perkins, and Phillip R. Coleman. APPLIED BOTULISM RESEARCH INCLUDING MANAGEMENT RECOMMENDATIONS / A PROGRESS REPORT. *Calif. Dept. Fish & Game.* i + 87 p., 17 figs. Jan. 1970. *WR 140: 169*
[Calif. Dept. Fish & Game, Sacramento.] Factors and concepts associated with the initiation, perpetuation and subsidence of an outbreak are discussed independently and summarized. Waterfowl botulism outbreaks are initiated when waterfowl ingest toxin. The sources of toxin are terrestrial or aquatic invertebrates that have become toxic as the result of changed water levels or qualities of fly larvae developing in decaying flesh. The greatest single factor in the perpetuation or expansion of an outbreak in the Sacramento-San Joaquin Valley is the presence of maggots associated with decaying carcasses. Recommendations for outbreak management are given categorically according to the main management phases. Surveillance is the first step of management and is therefore of utmost importance. Pick-up operations are to eliminate animal protein sources that result in maggot development. Pick-up operations, when combined with waterfowl herding, can sharply reduce waterfowl mortalities. An evaluation of pick-up vehicles is included. Two methods of carcass disposal are burning and quick lime treatment. Maggots must not be allowed to develop in disposal areas, since adult flies are toxic. Such areas should not be located near waterfowl treatment areas, as this could provide a toxic fly source for the inmate waterfowl. Methods for hospitalization and "hospital" construction are also presented.--From abstr.

Hunter, Brian F. ECOLOGY OF WATERFOWL BOTULISM TOXIN PRODUCTION. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 64-72, 3 figs. 1970. *WR 140: 169*
[Calif. Dept. Fish & Game, Sacramento.]

Hunter, Brian. WATERFOWL BOTULISM IN CALIFORNIA 1969. *Calif. Dept. Fish & Game Wildl. Mgmt. Administrative Rept.* no. 70-1. 10 p. Feb. 1970. *WR 140: 169*
[Calif. Dept. Fish & Game, Sacramento.] Abstract: The San Joaquin Valley had the potential for a severe botulism outbreak, but intensive management efforts kept losses to 45,000 birds. Outbreaks in the Sacramento Valley and the Klamath Basin caused the death of 84,000 and 11,000 waterfowl, respectively. Total losses in the state were 140,000 and an estimated 500,000 waterfowl were saved by management techniques. The extensive cooperative control program of the U.S. Bureau of Sport Fisheries and Wildlife and the California Department of Fish and Game including agency costs is presented. Biology of the individual outbreaks is discussed briefly.

Isakov, Yu. A. THE MAIN GEOGRAPHICAL POPULATIONS OF WATERFOWL IN THE USSR AND INTERNATIONAL MEASURES ON THEIR PROTECTION AND RIGHT USE. *VII Intern. Congr. Game Biol.* p. 127-133, 1 fig. 1967. In English with Russian summ. *WR 140: 169*
[Inst. Geogr., Acad. Sci. USSR, Moscow, USSR.]

Isakov, Yu. A. AIMS AND METHODS OF STUDYING WATERFOWL. *VIII Intern. Congr. Game Biol.* p. 50-54. 1970. In English with Russian summ. *WR 140: 169*
[Inst. Geogr., Acad. Sci. USSR, Moscow, USSR.]

Johnsgard, Paul A. WATERFOWL / THEIR BIOLOGY AND NATURAL HISTORY. *Univ. Nebr. Press* (Lincoln). xviii + 138 p., 16 figs. + 148 plates (59 in color). 8 x 10 in. 1968. Price $8.95. *WR 140: 170*

A general introduction to the world's waterfowl written in non-technical language. Photographs of most species are included--other species are included in drawings based on previously published drawings, paintings or photos. Preceding a key to waterfowl and an annotated list of the Anatidae of the world there are chapters treating the distribution, migration, ecology, general behavior, breeding biology, molts and plumages, evolution and hybridization of waterfowl.

Karstad, Lars, Peter Lusis, and J. R. Long. *PASTEURELLA ANATIPESTIFER* AS A CAUSE OF MORTALITY IN CAPTIVE WILD WATERFOWL. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 408-413, 5 figs. Oct. 1970. *WR 140: 170*

[Univ. Guelph, Guelph, Ontario, Canada.]

Kelsall, John P. CHEMICAL ELEMENTS IN WATERFOWL FLIGHT FEATHERS. *Progress Notes, Canadian Wildl. Serv.* no. 17. 11 p. Oct. 1970. In French and English. *WR 140: 170*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] *"Anser albifrons, Anas platyrhynchos, A. rubripes,* and *Aythya affinis."*

Kelsall, John P. COMPARATIVE ANALYSIS OF FEATHER PARTS FROM WILD MALLARDS. *Progress Notes, Canadian Wildl. Serv.* no. 18. 6 p. Oct. 1970. In French and English. *WR 140: 170*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Conclusion: Except perhaps where concentration of an element is critical, whole-feather analysis provides less variable results than vane-only analysis and is recommended for future work. The matter is worth further investigation.

Keskpaik, Yu., S. Onno, and A. Davydov. [DEVELOPMENT OF THE HEAT REGULATION IN THE FLEDGLINGS *PODICEPS CRISTATUS* AND *PODICEPS AURITUS* IN ONTOGENESIS.] *Izvest. Akad. Nauk Est. SSR Ser. Biol.* 17(2): 192-206, illus. 1968. [From Biol. Abstr. 51(15), 1970. In Russian with English summ.] *WR 140: 170*

[Acad. Sci. USSR, Leningrad, USSR.]

Kivisalu, Eino, Larry W. VanDruff, and Daniel Q. Thompson. WATERFOWL NESTING IN A GREEN-TIMBER IMPOUNDMENT. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 151-166, 6 figs. 1970. *WR 140: 170*

[N.Y. Coop. Wildl. Res. Unit, Ithaca.]

Kocan, R. M., and J. O. Knisley. INCIDENCE OF MALARIA IN A WINTERING POPULATION OF CANVASBACKS *(AYTHYA VALISINERIA)* ON CHESAPEAKE BAY. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 441-442. Oct. 1970. *WR 140: 170*

[Patuxent Wildl. Res. Center, Laurel, Md.]

Krivonosov, G. A. [METHODS OF DETERMINING THE TOTAL AMOUNT OF WATERFOWL CROSSING THE VOLGA DELTA AND MOULTING THERE.] *VIII Intern. Congr. Game Biol.* p. 78-81. 1970. In Russian with English summ. *WR 140: 170*

[Astrahanskii Goszapovednik, Astrahan, USSR.]

Kumari, E. V. [RESULTS OF RESEARCHES INTO THE MIGRATION AND WINTERING OF WATERFOWL IN THE SOVIET BALTIC STATES.] *VIII Intern. Congr. Game Biol.* p. 55-58. 1970. In Russian with English summ. *WR 140: 170*

XUM

LaHart, David Eugene. THE ECOLOGY AND POPULATION PARAMETERS OF THE FLORIDA DUCK, *ANAS PLATYRHYNCHOS FULVIGULA*, RIDGWAY. *M.S. thesis, Univ. Fla.* 103 p. June 1970. *WR 140: 171*

The Florida duck is a nonmigratory subspecies of mallard endemic to peninsular Florida. Where the two subspecies overlap in range today, genetic swapping of the Florida duck is prevented by early pair bond formation, differences in plumage and soft parts, and the displays associated with these features. Brood survival appears to be the most important population parameter. The exact effects of hunting cannot be evaluated until more accurate population figures are available. Florida ducks should be inventoried on a quarterly basis along the coast where populations are large enough to provide meaningful data.--From abstr. Courtesy/ George Cornwell.

Lebreton, P. NOTES SUR LA BIOLOGIE DE REPRODUCTION DU FULIGULE MILOUIN *AYTHYA FERINA*. [NOTES ON THE REPRODUCTIVE BIOLOGY OF THE POCHARD *AYTHYA FERINA*.] *Actes Réserve Biol. Dombes* 1966-1967: 16-42. 1968. [From Ibis 112 (4), 1970. In French with English summ.] *WR 140: 171*

Lehtonen, Leo. ZUR BIOLOGIE DES PRACHTTAUCHERS, *GAVIA A. ARCTICA* (L.). [BIOLOGY OF THE BLACK-THROATED DIVER, *GAVIA A. ARCTICA* (L.).] *Ann. Zool. Fenn.* 7(1): 25-60, illus. 1970. [From Biol. Abstr. 51(20), 1970. In German with English summ.] *WR 140: 171*

Leys, H. N., and J. J. F. E. De Wilde. [CHOICE OF NEST SITE AND MATERIAL IN THE GREAT CRESTED GREBE.] *Levende Nat.* 71: 265-272. 1968. [From Ibis 112(2), 1970. In Dutch with English summ.] *WR 140: 171*

Leys, H. N., J. Marbus, and J. J. F. E. De Wilde. [OBSERVATIONS OF A BREEDING POPULATION OF GREAT CRESTED GREBE *PODICEPS CRISTATUS* L. IN EAST FLEVOLAND.] *Levende Nat.* 72: 133-141. 1969. [From Ibis 112(2), 1970. In Dutch with English summ.] *WR 140: 171*

Lindroth, A., and E. Bergstrom. NOTES ON THE FEEDING TECHNIQUE OF THE GOOSANDER IN STREAMS. *Repts. Int. Freshwater Res. Drottningholm* (Fishery Bd. Sweden) no. 40. p. 165-175. 1959. [From Ibis 112(2), 1970.] *WR 140: 171*

"Mergus merganser."

Locke, Louis N., Vernon Stotts, and George Wolfhard. AN OUTBREAK OF FOWL CHOLERA IN WATERFOWL ON THE CHESAPEAKE BAY. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 404-407. Oct. 1970. *WR 140: 171*

[Patuxent Wildl. Res. Center, Laurel, Md.]

Lotter, Charles F. ESTIMATION OF POPULATION LEVELS AND HUNTER HARVEST OF THE FLORIDA DUCK, *ANAS PLATYRHYNCHOS FULVIGULA*. *M.S. thesis, Univ. Fla.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 171*

McLaughlin, J. Daniel, and Michael D. B. Burt. OBSERVATIONS ON THE MORPHOLOGY AND LIFE CYCLE OF *HYMENOLEPIS HOPKINSI* SCHILLER 1951 (CESTODA: CYCLOPHYLLIDEA), A PARASITE OF BLACK DUCKS *(ANAS RUBRIPES* BREWSTER). *Canadian J. Zool.* 48(5): 1043-1046, 3 figs. Sept. 1970. *WR 140: 171*

[Univ. New Brunswick, Fredericton, New Brunswick, Canada.]

McMahan, Craig A. FOOD HABITS OF DUCKS WINTERING ON LAGUNA MADRE, TEXAS. *J. Wildl. Mgmt.* 34(4): 946-949, 1 fig. Oct. 1970. *WR 140: 171*

[Texas A&M Univ., College Station.] Abstract: Shoalgrass *(Diplanthera wrightii)*, a submergent spermatophyte, comprised 84 and 88% by volume of the respective diets of redheads *(Aythya americana)* and pintails *(Anas acuta)*

wintering on Laguna Madre, Texas. Lesser scaup *(Aythya affinis)* consumed mostly animal foods, chiefly molluscs. The prominence of shoalgrass in the diet of redheads and pintails is due to its abundance in Laguna Madre, where there are few other rooted aquatic plants.

Mihelsons, H., G. Lejiņš, A. Mednis, and V. Klimpiņš. ATTACHMENT TO THE TERRITORY AND REPRODUCTION EFFECTIVENESS OF THE TUFTED DUCK ON LAKE ENGURE (LATVIAN SSR). *VIII Intern. Congr. Game Biol.* p. 82-85. 1970. In English with Russian summ. *WR 140: 172*
[Inst. Biol., Riga, Latvian SSR.]

Moksnes, Arne. LITT OM SKEJEANDA SOM RUGEFUGL I NORGE. [THE BREEDING STATUS OF THE SHOVELER, *ANAS CLYPEATA*, IN NORWAY.] *Sterna* 8(3): 146-155, illus. 1968. [From Biol. Abstr. 51(23), 1970. In Norwegian with English summ.] *WR 140: 172*

Morley, J. V., and R. S. Cook. MOULT MIGRATION OF BRIDGWATER BAY SHELDUCK AND MIGRATION ROUTES FROM SOUTH-WEST AND SOUTHERN ENGLAND. *British Birds* 63(2): 81-83. 1970. *WR 140: 172*
[The Nature Conservancy, Taunton, Somerset, England.]

Morrow, Thomas L., and Fred A. Glover. EXPERIMENTAL STUDIES ON POST-MORTEM CHANGES IN MALLARDS. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 134. i + 24 p., 6 figs. [1970.] *WR 140: 172*
[Colo. Coop. Wildl. Res. Unit, Fort Collins.] Post-mortem changes in mallards were studied to develop techniques of estimating time since death in birds killed by hunters. Birds were trapped during the winters of 1965 and 1966, killed and held for observation in controlled-temperature rooms. Body temperature, eye appearance, muscle rigor, and tracheal ciliary activity should prove useful as field methods of estimating time since death.--From abstr.

Nilsson, L. [THE BEHAVIOR OF THE GOLDENEYE *BUCEPHALA CLANGULA* IN THE WINTER.] *Vår Fågelvärld* 28: 199-210. 1969. [From Auk 87(3), 1970. In Swedish with English summ.] *WR 140: 172*
[Zool. Inst., Lund, Sweden.]

Nilsson, Leif. DIFFICULTIES IN ESTIMATING THE TRUE SEX RATIO OF DUCKS FROM WINTER-COUNTS. *VIII Intern. Congr. Game Biol.* p. 86-88. 1970. In English with Russian summ. *WR 140: 172*
[Zool. Inst., Lund, Sweden.]

Norman, F. I. MORTALITY AND DISPERSAL OF HARDHEADS BANDED IN VICTORIA. *Emu* 70(3): 126-130, 2 figs. July 1970. *WR 140: 172*
[Arthur Rylah Inst. Environmental Res., Heidelberg, Australia.] The Fisheries and Wildlife Dept. banded 454 *Aythya australis* between 1957 and 1966. Mortality rates and dispersal of the species are calculated from 52 recoveries.

Olney, P. J. S. THE FOOD AND FEEDING-HABITS OF THE POCHARD, *AYTHYA FERINA*. *Biol. Conserv.* 1(1): 71-76. 1968. [From Biol. Abstr. 51(18), 1970.] *WR 140: 172*
[Roy. Soc. Protect. Birds, Sandy, Bedfordshire, England.]

Oppenheim, Ronald W. SOME ASPECTS OF EMBRYONIC BEHAVIOUR IN THE DUCK *(ANAS PLATYRHYNCHOS)*. *Animal Behaviour* 18(2): 335-352, 14 figs. May 1970. *WR 140: 172*
[Dorothea Dix Hospital, Raleigh, N.C.]

Pearson, Gary L. ASPERGILLOSIS IN WINTERING MALLARDS. *Bull. Wildl. Disease Assoc.* 5(4): 404-405. Oct. 1969. *WR 140: 172*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.]

Popov, V. A. [FACTORS DEFINING CHANGES IN WATERFOWL POPULATION (FROM THE MATERIALS FOR THE VOLGA-KAMA AREA).] *VIII Intern. Congr. Game Biol.* p. 89-92. 1970. In Russian with English summ. *WR 140: 173*

Poston, Herbert James. HOME RANGE AND BREEDING BIOLOGY OF THE SHOVELER, *ANAS CLYPEATA*, IN THE ALBERTA GRASSLAND. *M.S. thesis, Utah State Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 173*

Rossi, Jose A. Haedo. NOTAS ORNITOLOGICAS: VI. OBSERVACIONES SOBRE EL "PATO ARGENTINO" EN SEMICAUTIVIDAD. [ORNITHOLOGICAL NOTES: VI. OBSERVATIONS ON THE "ARGENTINE DUCK" IN SEMICAPTIVITY.] *Acta Zool. Lilloana* 25(8): 99-106, illus. 1969. [From Biol. Abstr. 51(17), 1970. In Spanish with English summ.] *WR 140: 173*
[Univ. Nacl., Fund. Inst. Miguel Lille, Tucuman, Argentina.]

Sen, A. R. ON THE BIAS IN ESTIMATION DUE TO IMPERFECT FRAME IN THE CANADIAN WATERFOWL SURVEYS. *J. Wildl. Mgmt.* 34(4): 703-706. Oct. 1970. *WR 140: 173*
[Dept. Indian Affairs & Northern Development, Canada.] Abstract: A special sample survey of waterfowl hunters in Ontario during 1968-69, was designed to estimate the bias, if any, resulting from the use of 1966-67 list of permit holders as a sampling frame for the estimation of characteristics of the annual harvest for 1967 in Ontario in the Canadian Waterfowl Survey. The survey showed that although there was no apparent bias in the estimate of kill per day, both the estimates of kill and days per hunter were subject to an upward bias. It was estimated that the national estimates of kill of ducks for Ontario for 1967-68 has an upward bias to the extent of 8.5 percent.

Sermet, Emile. SUR LE COMPORTEMENT NOCTURNE DU GRÈBE CASTAGNEUX *PODICEPS RUFICOLLIS* À YVERDON. [THE NOCTURNAL BEHAVIOR OF THE LITTLE GREBE *PODICEPS RUFICOLLIS* AT YVERDON.] *Nos Oiseaux Bull. Soc. Romande Etude Protect Oiseaux* 29(319): 269-273, illus. 1968. [From Biol. Abstr. 51(18), 1970. In French.] *WR 140: 173*
[Rue des Cygnes 27, Yverdon, France.]

Sibley, Fred C. WINTER WING MOLT IN THE WESTERN GREBE. *Condor* 72(3): 373. July 1970. *WR 140: 173*
[Point Reyes Bird Observatory, Bolinas, Calif.] *"Aechmophorus occidentalis."*--Courtesy/ Paul A. Stewart.

Simmons, K. E. L. DURATION OF DIVES IN THE RED-NECKED GREBE. *British Birds* 63(7): 300-302. 1970. *WR 140: 173*
[Univ. Leicester, Leicester, England.] *"Podiceps grisegena."*

Smith, Robert I. RESPONSE OF PINTAIL BREEDING POPULATIONS TO DROUGHT. *J. Wildl. Mgmt.* 34(4): 943-946, 2 figs. Oct. 1970. *WR 140: 173*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Abstract: An inverse relationship *(r = -0.91)* between numbers of water areas on the prairies of Alberta and Saskatchewan and the portion of the pintail *(Anas acuta)* population moving north of the prairies and parklands is apparent for the years 1959-68. As the portion of the pintail population moving into northern areas increased, an index of annual production declined *(r = -0.92)*.

Snart, Allen Edward. THE EFFECTS OF HEAT ON MALLARD EMBRYOS. *M.S. thesis, Univ. Fla.* 61 p. June 1970. *WR 140: 173*
Overall hatchability was decreased by high temperature exposure. The most severe exposure (44°C for 6 hours) resulted in 87% mortality. Mortality at time of treatment increased at the highest temperature. At extreme temperatures most mortalities did not exhibit any malformation. The greatest resistance to hyperthermia was exhibited by eggs prior to and immediately following the initiation of incubation.--From abstr. Courtesy/ George Cornwell.

Stone, Ward B. THE ECOLOGY OF PARASITISM IN CAPTIVE WATERFOWL. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 167-185. 1970. *WR 140: 174*
[Wildl. Res. Lab., Delmar, N.Y.]

Sugden, Lawson Gordon. FOODS, FOOD SELECTION, AND ENERGY REQUIREMENTS OF WILD DUCKLINGS IN SOUTHERN ALBERTA. *Ph.D. thesis, Utah State Univ.* 183 p. 1969. [From Dissertation Abstr. Intern. 30(8B), 1970.] *WR 140: 174*
Determination and nutritional analyses of diet, factors influencing food use, and energy requirements of *Anas strepera, A. acuta, Mareca americana,* and *Aythya affinis* were investigated.

Sugden, Lawson G., and Herbert J. Poston. A RAFT TRAP FOR DUCKS. *Bird-Banding* 41(2): 128-129, 1 fig. Apr. 1970. *WR 140: 174*
[Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada.] The raft appears to have possibilities in trapping *Aythya affinis, Anas strepera,* and *A. discors.*--Courtesy/ Paul A. Stewart.

Swanson, George A., and James C. Bartonek. BIAS ASSOCIATED WITH FOOD ANALYSIS IN GIZZARDS OF BLUE-WINGED TEAL. *J. Wildl. Mgmt.* 34(4): 739-746. Oct. 1970. *WR 140: 174*
[Northern Prairie Res. Center, Jamestown, N. Dak.] Abstract: The food contents of 67 adult and flying juvenile blue-winged teal *(Anas discors)* collected during the spring and summer months of 1967 and 1968 on prairie wetlands in central North Dakota were statistically compared. The results demonstrated disagreement in food composition between the esophageal and gizzard contents. Differences observed in wild birds were confirmed experimentally in 13 feeding trials in which drake blue-winged teal were fed natural foods and then killed at time intervals ranging from 2.5 minutes to 72 hours later. The magnitude of the bias related to digestability increased in direct proportion to the time lapse between feeding and sampling. Soft foods broke down within minutes while hard seeds were retained for days. Reliable information can be obtained by analyses of esophageal contents, collecting birds that are actively feeding, immediately removing contents of the esophagus, and preserving foods in 80% alcohol.

Tener, John S., and Alan G. Loughrey. THE MIGRATORY WATERFOWL PROGRAM IN CANADA. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 287-295. 1970. *WR 140: 174*
[Canadian Wildl. Serv., Ottawa, Ontario.]

Urbánek, Bohuslav. DIE FRAGE UNTERSCHIEDLICHER WINTERAREALE BEI DEN GESCHLECHTERN UND ALTERSGRUPPEN DER STOCKENTE, *ANAS PLATYRHYNCHOS.* [THE QUESTION OF DISTINCT WINTERING AREAS FOR SEX AND AGE GROUPS OF THE MALLARD *(ANAS PLATYRHYNCHOS).*] *VIII Intern. Congr. Game Biol.* p. 93-96. 1970. In German with Russian summ. *WR 140: 174*
[Kozlovská 22, Prague, Czechoslovakia.]

Uspenskii, S. M. [WATERFOWL OF THE SOVIET ARCTIC AND SUBARCTIC REGIONS.] *VIII Intern. Congr. Game Biol.* p. 97-100. 1970. In Russian with English summ. *WR 140: 174*
[Moscow Univ., Moscow, USSR.]

Walker, John W., Claude J. Pfow, Stanley S. Newcomb, William D. Urban, Harold E. Nadler, and Louis N. Locke. STATUS OF DUCK VIRUS ENTERITIS (DUCK PLAGUE) IN THE UNITED STATES. *Proc. 73rd Ann. Meeting US Animal Health Assoc. Oct. 1969.* p. 254-279, 11 figs. [1969.] *WR 140: 174*
[Agr. Res. Serv., Beltsville, Md.]

Watson, R. M., T. Singh, and I. S. C. Parker. THE DIET OF DUCK AND COOT ON LAKE NAIVASHA. *East African Wildl. J.* 8: 131-144, 4 figs. Aug. 1970. *WR 140: 174*
[P.O. Box 15068, Nairobi, Kenya.]

XUM

Watts, David Estes. AN EVALUATION OF SOME COMPONENTS OF WOOD DUCK HABITAT AT JOHN SEVIER LAKE, HAWKINS COUNTY, TENNESSEE. *M.S. thesis, Univ. Tenn.* 1968. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 175*

Weller, Milton W. ADDITIONAL NOTES ON THE PLUMAGES OF THE REDHEAD *(AYTHYA AMERICANA). Wilson Bull.* 82(3): 320-323, 2 figs. Sept. 1970. *WR 140: 175*
[Iowa State Univ., Ames.] The molting chronology of captive birds.--Courtesy/ Paul A. Stewart.

Wheeler, Richard J., and Stanley W. Harris. DUCK NESTING AND PRODUCTION IN THE HUMBOLDT BAY AREA OF CALIFORNIA. *Calif. Fish & Game* 56(3): 180-187, 1 fig. July 1970. *WR 140: 175*
[Petaluma Secondary Schools, Petaluma, Calif.] At Humboldt Bay the nesting season for mallards *(Anas platyrhynchos)* lasted about 145 days in 1964 and 130 days in 1965. The nesting season for cinnamon teal *(Anas cyanoptera)* lasted about 135 days in 1964 and 115 days in 1965. Approximately 53% of the mallard nests and 46% of the cinnamon teal nests were on banks of sloughs or ponds. Nearly 70% of all mallard nests and 80% of cinnamon teal nests were in grasses or grasslike plants. Mallards tended to nest in cover over 25 inches high (63.2% of all nests) while cinnamon teal generally utilized cover less than 24 inches high (86.7% of all nests). Nests of most mallards and cinnamon teal were either completely concealed or had only one side or the top exposed. Hatching success was 65.1% for mallards and 44.0% for cinnamon teal. During 1964 and 1965 the peak of the hatch occurred from early to mid-May for mallards and from late May to early June for cinnamon teal. The size of mallard broods ranged from 9.2 at hatching to 4.6 near the time of flying; for cinnamon teal the range was from 10.7 to 5.8. Estimated duck production was one per 8.1 acres in 1964 and one per 10.2 acres in 1965 in the Humboldt Bay area.--From abstr.

Wobeser, G. APPARENT FAVORABLE RESPONSE OF LEAD POISONING IN A DUCK TO TREATMENT WITH A CHELATING AGENT. *Bull. Wildl. Disease Assoc.* 5(2): 120. Apr. 1969. *WR 140: 175*
[Univ. Guelph, Guelph, Ontario, Canada.]

Woodworth, John R. THE STATES' VIEWS ON WATERFOWL MANAGEMENT. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 304-312. 1970. *WR 140: 175*
[Idaho Fish & Game Dept., Boise.] Conclusion: In conclusion, the states recognize that the present waterfowl management program is being generally well administered. They believe, however, that the time has arrived to initiate management programs on a more intensive basis which would include States' participation to a greater degree. More intensive management must be preceded by research in problem areas.

Young, Colin M. TERRITORIALITY IN THE COMMON SHELDUCK *TADORNA TADORNA. Ibis* 112(3): 330-335, 1 fig. July 1970. *WR 140: 175*
[Laurentian Univ., Sudbury, Ontario, Canada.] Territory size is determined by the immediate topography of the area and by the limits of tolerance of the owner. The distribution of territories was found to be related to the distribution of *Hydrobia ulvae*, which is the staple item in the shelducks' diet. Territories from which both birds were experimentally removed were reoccupied by birds from the surplus flock, usually within a matter of days. When females of territorial pairs were removed, the surviving males invariably deserted their territories, but when the males were removed, the females remained on their territories and eventually acquired new mates.--From summ.

Zohrer, James J. OBSERVATIONS ON PREMIGRATORY MOVEMENTS OF HAND-REARED MALLARDS. *Wilson Bull.* 82(3): 323-324, 1 fig. Sept. 1970. *WR 140: 176*
[Univ. Wis., Madison.] Of 301 juvenile mallards released in July and August, 15 were shot north of the release site before 26 October. Only 3 were recovered south of it. Average distance traveled during this time interval was 51.3 miles.--Courtesy/ Paul A. Stewart.

SWANS & GEESE

Abe, Manabu. [SOME NOTES ON THE SWANS, AND ON THE MAIN FACTORS THAT CAUSED THEIR EXTENSIVE DEATH AT ODAITO BAY, NEMURO, HOKKAIDO.] *Tori Bull. Ornithol. Soc. Japan* 18(85): 379-391, illus. 1968. [From Biol. Abstr. 51(15), 1970. In Japanese with English summ.] *WR 140: 176*
[Govt. Forest Expt. Sta., Inst. Wildl., Tokyo, Japan.]

Bell, James G. HORICON GOOSE DILEMMA. *Wis. Conserv. Bull.* 35(6): 16-17, 1 fig. Nov.-Dec. 1970. *WR 140: 176*
[Wis. Dept. Nat. Resources, Horicon.] More than 100,000 geese have stopped over each fall at the refuge, which can feed only 50,000. Depredations on surrounding farms and low quality hunting have necessitated management measures to disperse some of the flocks to other areas.

Dill, Herbert H., and Forrest B. Lee, editors. HOME GROWN HONKERS. *US F&WS.* 154 p., [57 figs.]. 1970. *WR 140: 176*
Technical information for establishing small breeding flocks of giant Canada geese in home areas is presented. Details for acquiring breeding stock, pen facilities needed, food and water requirements, management of breeding pairs, incubation, and brooding and rearing of goslings are provided. Special problems such as disease are also considered. Work by federal, state and private agencies in goose restoration during the past 20 years is reported.

Ellis, John W. THE TRUMPETER SWAN RETURNS TO SOUTH DAKOTA. *S. Dak. Birds Notes* 22(4): 112-114, illus. Dec. 1970. *WR 140: 176*
[US F&WS, Div. Refuges, Minneapolis, Minn.] Sixty-two cygnets attained flight age as progeny of the original transplant flock during the period 1963-1967.

Flath, Dennis L. REPRODUCTIVE SUCCESS OF CANADA GEESE IN THE BITTERROOT VALLEY, MONTANA. *M.S. thesis, Univ. Mont.* 61 p. 1970. *WR 140: 176*

Fog, M. [GEESE IN DENMARK.] *Natur Mus. Århus* 13: 3-18. 1969. [From Ibis 112(2), 1970. In Danish.] *WR 140: 176*
Distribution of *Anser* and *Branta* in Denmark.

Guiler, E. R. THE USE OF BREEDING SITES BY BLACK SWANS IN TASMANIA. *Emu* 70(1): 3-8, 1 fig. Mar. 1970. *WR 140: 176*
[Univ. Tasmania, Box 252C, GPO, Hobart, Tasmania.] Breeding records of *Cygnus atratus* are considered in relation to breeding sites at Moulting Lagoon, Tasmania. Certain sites are favored and used annually, whereas others are used irregularly and only during very good breeding years. The annual mean clutch-size is, contrary to expectations, highest during years of poor breeding, and only experienced birds are successful breeders in these years. It is recommended that certain sites should be protected against interference during the breeding season, that measures be initiated to prevent further destruction of habitat by swans, and that plans be made to construct artificial breeding islands.--From summ.

Hammer, Donald A. TRUMPETER SWAN CARRYING YOUNG. *Wilson Bull.* 82(3): 324-325, 1 fig. Sept. 1970. *WR 140: 176*
[Lacreek Natl. Wildl. Refuge, Martin, S. Dak.] *"Olor buccinator."*--Courtesy/ Paul A. Stewart.

Hanson, Harold C. THE GIANT CANADA GOOSE. *Southern Ill. Univ. Press* (Carbondale and Edwardsville). xxiii + 226 p. + 74 figs., 6.75 x 10.25 in. 1965. Price $9.75. *WR 140: 177*

Rediscovery of *Branta canadensis maxima* in 1962 serves as a basis for a review of all information on the subspecies. Topics of discussion: History of discovery; Physical characteristics; Breeding range; Migration; Wintering grounds; Nesting; Growth, development, and flightless periods; Characters of age, sex, and sexual maturity; Foods and feeding habits, Endoparasites; Physiology; Behavior; Productivity and regulation of populations; and Management.

Harvey, John Michael. FACTORS AFFECTING NESTING SUCCESS IN THE BLUE GOOSE. *Ph.D. thesis, Cornell Univ.* 147 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 177*

"Chen caerulescens."

Heyland, J. D. AIRCRAFT-SUPPORTED CANADA GOOSE BANDING OPERATIONS IN ARCTIC QUEBEC. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 187-198, 2 figs. 1970. *WR 140: 177*

[Quebec Wildl. Serv., Quebec, Canada.]

Holden, B. L., and W. J. L. Sladen. HEART WORM, *SARCONEMA EURYCERCA*, INFECTION IN WHISTLING SWANS, *CYGNUS COLUMBIANUS*, IN CHESAPEAKE BAY. *Bull. Wildl. Disease Assoc.* 4(4): 126-128. Oct. 1968. *WR 140: 177*

[Alaska Dept. Fish & Game, Fairbanks.] Seven whistling swans from the eastern shore of Chesapeake Bay, Maryland, were examined for parasites during the spring, 1967, and all contained nematodes, *Sarconema eurycerca*, in the myocardium. The mean number of worms, most of which were female worms, was 12 per host. Both mature and immature worms were found in juvenile and adult hosts. *S. eurycerca* has been implicated as a cause of death among wild and captive swans and its damage to the heart is known to be severe. However, since the numbers of birds in the area do not appear to be decreasing, light infections may not be pathogenic.--From abstr.

Johns, J. E., and C. W. Erickson. BREEDING OF FREE-LIVING TRUMPETER SWANS IN NORTHEASTERN WASHINGTON. *Condor* 72(3): 377-378. July 1970. *WR 140: 177*

[Eastern Wash. State Coll., Cheney.] *"Olor buccinator."*--Courtesy/ Paul A. Stewart.

Kear, Janet. FEEDING HABITS OF THE GREYLAG GOOSE *ANSER ANSER* IN ICELAND, WITH REFERENCE TO ITS INTERACTION WITH AGRICULTURE. *VII Intern. Congr. Game Biol.* p. 615-622, [3 figs.]. 1967. In English with Russian summ. *WR 140: 177*

[Wildfowl Trust, Slimbridge, Gloucestershire, England.]

Kear, Janet. THE EXPERIMENTAL ASSESSMENT OF GOOSE DAMAGE TO AGRICULTURAL CROPS. *Biol. Conserv.* 2(3): 206-212. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 177*

[Wildfowl Trust, Slimbridge, Gloucestershire, England.] *"Anser anser* and *A. brachyrhynchus."*

Kraus, Manfred, and Anton Gauckler. ZUR AUSBREITUNG DES HÖCKERSCHWANES *(CYGNUS OLOR)* IN NORDBAYERN. [ON THE INCREASE OF THE MUTE SWAN *(CYGNUS OLOR)* IN NORTHERN BAVARIA.] *Anz. Ornithol. Ges. Bayern* 8(5): 452-462. 1969. [From Biol. Abstr. 51(20), 1970. In German with English summ.] *WR 140: 177*

[Tiergarten Stadt, Nürnberg, Germany.]

Kuyken, Eckhart. MELANISME, ALBINISME EN ANDERE KLEURAFWIJKINGEN BIJ WILDE GANZEN. [MELANISM, ALBINISM AND OTHER PLUMAGE VARIANTS IN WILD GEESE.] *Le Gerfaut* 60: 3-25. 1970. In Dutch with French and English summ. *WR 140: 177*

Lebret, T. NACHTELIJK VOEDSELZOEKEN VAN DE GRAUWE GANS *(ANSER ANSER)* IN DE SEEWINKEL, NEUSIEDLERSEE. [NOCTURNAL FEEDING HABITS OF THE GREY LAG GOOSE *(ANSER ANSER)* IN THE SEEWINKEL, NEUSIEDLERSEE (AUSTRIA).] *Levende Nat.* 72: 152-159, 1 fig. 1969. In Dutch with English summ. *WR 140: 178*

Lebret, T. NACHTELIJK VOEDSELZOEKEN EN ANDERE ACTIVITEITEN VAN DE GRAUWE GANS *(ANSER ANSER)* IN HET ZOETE GETIJ-MILIEU IN NEDERLAND. [NOCTURNAL FEEDING AND OTHER ACTIVITIES OF THE GREY LAG GOOSE *(ANSER ANSER)* IN FRESH WATER TIDAL HABITAT IN THE NETHERLANDS.] *Limosa* 43(1-2): 11-30, [5] figs. 1970. In Dutch with English summ. *WR 140: 178*

Leibovitz, Louis. NATURAL OCCURRENCE AND EXPERIMENTAL STUDY OF POX AND HAEMOPROTEUS INFECTIONS IN A MUTE SWAN *(CYGNUS OLOR)*. *Bull. Wildl. Disease Assoc.* 5(3): 130-136, 3 figs. July 1969. *WR 140: 178*

[Duck Res. Lab., Eastport, Long Island, N.Y.] Abstract: Pox and *Haemoproteus* sp. infections in a mute swan are reported. Experimental study of the swan pox isolate indicated that geese were susceptible, but chickens, ducks, and pigeons were resistant to the virus. The distinctive feature of pox infection in the swan was the invasive proliferation deep into the subcutaneous tissues of the face and beak, producing facial deformity and swelling.

Nachtigall, Werner. PHASENBEZIEHUNGEN DER FLUEGELSCHLAEGE VON GAENSEN WAEHREND DES VERBANDFLUGS IN KEILFORMATION. [PHASE RELATIONSHIP IN THE WING BEAT OF GEESE FLYING IN "V" FORMATION.] *Z. Vergl. Physiol.* 67(4): 414-422, illus. 1970. [From Biol. Abstr. 51(22), 1970. In German with English summ.] *WR 140: 178*

[Univ. Saarlandes, Saarbrücken, Germany.]

Norderhaug, Magnar. THE PRESENT STATUS OF THE BARNACLE GOOSE *(BRANTA LEUCOPSIS)* IN SVALBARD. *Norsk Polarinst. Arbok* 1968: 24-35, illus. 1970. [From Biol. Abstr. 51(17), 1970. In English with Russian summ.] *WR 140: 178*

Norderhaug, Magnar. THE PRESENT STATUS OF THE BRENT GOOSE *(BRANTA BERNICLA HROTA)* IN SVALBARD. *Norsk Polarinst. Arbok* 1968: 7-23, illus. 1970. [From Biol. Abstr. 51(17), 1970. In English with Russian summ.] *WR 140: 178*

Ogilvie, M. A. BEWICK'S SWANS IN BRITAIN AND IRELAND DURING 1956-69. *British Birds* 62(12): 505-522. Dec. 1969. *WR 140: 178*

[Wildfowl Trust, Slimbridge, Gloucester, England.] The past status of the Bewick's swan *Cygnus bewickii* in Britain is briefly reviewed and the period from 1956 to 1969 examined in some detail. The species now winters regularly at six sites, which are described, four of them having come into use during the 1956 influx. Habitats, ranges, breeding success, and population counts are discussed.--From summ.

Palmer, S. F., and D. O. Trainer. SEROLOGIC STUDY OF SOME INFECTIOUS DISEASES OF CANADA GEESE. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 260-266. July 1969. *WR 140: 178*

[Univ. Wis., Madison.] Of more than 1200 serums screened in the metabolic-inhibition test (MIT), no serums neutralized eastern encephalitis virus, less than 1% neutralized western and Venezuelan encephalitis viruses, 2% neutralized St. Louis encephalitis virus, and 29% neutralized California encephalitis virus (CEV). Supplementary serologic procedures indicated that a nonspecific inhibitor probably caused inhibition of CEV in the MIT.--From abstr.

Palmer, S. F., and D. O. Trainer. SEROLOGIC EVIDENCE OF NEWCASTLE DISEASE VIRUS IN CANADA GEESE. *Avian Diseases* 14(3): 494-502, 1 fig. Aug. 1970. *WR 140: 178*

[Univ. Wis., Madison.] Summary: Newcastle disease virus (NDV) hemagglutination-inhibition (HI) titers of 1:20 or higher were detected in 31% of 3,010 sera from migratory and nonmigratory Canada geese *(Branta canadensis)*.

HI titers ranged to 1:1280, and virus neutralization (VN) titers ranged to $10^{6.3+}$. Reactor-prevalence was 1% among flightless juveniles and higher in older geese. Prevalence of NDV reactors did not differ consistently between migratory and nonmigratory Canada geese or between sexes. The correlation of NDV HI and VN titers and the predominant resistance of the Canada goose HI substance to heat-trypsin-periodate treatment suggested that a reasonable indication of previous exposure of Canada geese to NDV is an HI titer of 1:20. A probable isolation of NDV was made from the spleen of a wild Canada goose.

Philippona, J., and H. T. v. d. Meulen. DE GANZEN IN HET MIDDEN EN ZUIDEN VAN FRIESLAND. [THE GEESE IN THE CENTRAL AND SOUTHERN PARTS OF FRIESLAND.] *Limosa* 42(3-4): 139-155, 4 figs. 1969. In Dutch with English summ. *WR 140: 179*

"Anser a. anser, Anser a. albifrons, Anser fabalis brachyrhynchus, and *Branta leucopis."*

Raveling, Dennis G. SURVIVAL OF CANADA GEESE UNAFFECTED BY WITHDRAWING BLOOD SAMPLES. *J. Wildl. Mgmt.* 34(4): 941-943. Oct. 1970. *WR 140: 179*

[Canadian Wildl. Serv., Winnipeg, Manitoba, Canada.] Abstract: Approximately 3 cc of blood were removed from each of 20 adult and 83 young (approximately 7 weeks old) Canada geese *(Branta canadensis).* These bled geese, as well as 43 unbled adults and 218 unbled goslings, were marked with individually identifiable plastic neck bands. Observations between 2 and 5 weeks after capture and bleeding revealed that survival was not affected by taking blood samples.

Rutherford, William H. THE CANADA GEESE OF SOUTHEASTERN COLORADO. *Colo. Div. Game, Fish & Parks Tech. Publ.* no. 26. x + 65 p., 13 figs. Sept. 1970. Price $1.00. *WR 140: 179*

[Colo. Div. Game, Fish & Parks, Denver.] The Short Grass Prairie Canada goose population wintering in southeastern Colorado numbers more than 100,000 birds. The rapid increase in population since the late 1940's has been due largely to changing land use and the creation of irrigation systems. The characteristics of the population, their ecology, results of trapping and banding studies, hunting pressure, and management implications are discussed.

Smith, Robert H., and G. Hortin Jensen. BLACK BRANT ON THE MAINLAND COAST OF MEXICO. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 227-241, 1 fig. 1970. *WR 140: 179*

[Medford, Oreg.]

Surrendi, Dennis C. THE MORTALITY, BEHAVIOR, AND HOMING OF TRANSPLANTED JUVENILE CANADA GEESE. *J. Wildl. Mgmt.* 34(4): 719-733, 3 figs. Oct. 1970. *WR 140: 179*

[411 28 Ave., N.W., Calgary, Alberta, Canada.] Homing of yearling females was significantly *($P<0.05$)* higher than for yearling males. Eighty-five and 86% of the initial sightings of yearling females in 1968 and 1969 respectively, were on or within 1 mile of their release sites. In 1969, 32% of the initial sightings of yearling males were on or within 1 mile of their release sites. Eighty percent of the homing yearling females formed pair relationships during 1968 and 1969, with 68% occurring on the study area. Females appeared attracted to their release sites whether they were paired or unpaired. Sixty-eight percent of the yearling males showed pairing tendencies in 1969. Twenty-seven percent of these pair associations occurred on the study area. Of the yearling males returning, only those forming pair associations remained on the study area for 30 days or longer. Apparently the males were more attracted to the females in the pair associations than to their release sites. The pair bonds of some of the yearling females appeared to become unstable just prior to the summer molt migration. No 2-year-old males were known to home to the area. Five 2-year-old females homed to and paired on their release sites. One 2-year-old female nested and successfully raised a brood of 5 goslings.--From abstr.

Troostwijk, W. J. Doude van. THE MOVEMENTS OF EUROPEAN WHITE-FRONTED GEESE *(ANSER A. ALBIFRONS* SCOP.) RINGED IN THE NETHERLANDS. *VII Intern. Congr. Game Biol.* p. 191-193. 1967. In English and French. *WR 140: 180*
[ITBON, Arnhem, Netherlands.]

Waaramäki, Tauno. HAVAINTOJA METSÄHANHESTA KUUSAMOSSA JA SALLASSA. [OBSERVATIONS ON THE BEAN GOOSE *(ANSER FABALIS)* IN KUUSAMO AND SALLA, NE FINLAND.] *Suomen Riista* 22: 89-96, 3 figs. 1970. In Finnish with English summ. *WR 140: 180*

Will, Gary C., and Gurney I. Crawford. ELEVATED AND FLOATING NEST STRUCTURES FOR CANADA GEESE. *J. Wildl. Mgmt.* 34(3): 583-586, 2 figs. July 1970. *WR 140: 180*
[Idaho Coop. Wildl. Res. Unit, Moscow.] Abstract: Two types of goose nesting structures have been designed by the Colorado Division of Game, Fish and Parks. These structures are being used successfully by a resident flock of Canada geese *(Branta canadensis)* in north-central Colorado, primarily Larimer County. The two types of structures are: (1) an elevated single-pole structure which consists of a nest box mounted on a 9-ft post, and (2) a floating canoe-like platform which supports a nest box. The materials, construction, and suggestions for erecting both types of structures are discussed.

CRANES, RAILS, SHOREBIRDS

Anderegg, Kurt. BRUT DER SCHWARZKOPFMÖWE *LARUS MELANOCEPHALUS* IM KALTBRUNNERRIED. [BROOD OF THE BLACK-HEADED GULL *LARUS MELANOCEPHALUS* IN THE KALTBRUNNERRIED.] *Ornithol. Beob.* 66(5/6): 156-163, illus. 1969. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 180*
[Hanflanderstr. 61, Rapperswil, Switzerland.]

Bauer, Willy, and Werner Keil. 2. NACHTRAG ZUR BRUTVERBREITUNG DES KIEBITZ: *VANELLUS VANELLUS*: IN HESSEN. [SECOND SUPPLEMENT ON THE BREEDING RANGE OF THE LAPWING: *VANELLUS VANELLUS* IN HESSE.] *Luscinia* 40(6): 250-252, illus. 1969. [From Biol. Abstr. 51(18), 1970. In German.] *WR 140: 180*
[Schneckenhofstr. 35, Frankfurt/Main, Germany.]

Birkenmajer, Krzysztof. OBSERWACJE NAD MEWA MODRODZIOBA, *PAGOPHILA EBURNEA* (PHIPPS), W POLUDNIOWEJ CZESCI ZACHODNIEGO SPITSBERGENU. [OBSERVATIONS ON IVORY GULL, *PAGOPHILA EBURNEA* (PHIPPS), IN SOUTH VESTSPITSBERGEN.] *Acta Ornithol.* (Warsaw) 11(13): 461-476, illus. 1969. [From Biol. Abstr. 51(22), 1970. In Polish with Russian and English summ.] *WR 140: 180*

Blaker, D. THE BEHAVIOR OF *EGRETTA GARZETTA* AND *E. INTERMEDIA*. *Ostrich* 40: 150-155. 1969. [From Auk 87(4), 1970.] *WR 140: 180*

Boecker, M. DER "FÜTTERUNGSERFOLG" BEI FLUSS- UND KÜSTENSEESCHWALBE *(STERNA HIRUNDO* UND *ST. PARADISAEA)*. [THE "FEEDING RESULTS" OF THE COMMON TERN *(STERNA HIRUNDO)* AND THE ARCTIC TERN *(STERNA PARADISAEA).*] *Vogelwelt* 89: 221-225. 1968. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 180*
[Zool. Mus. Alexander Koenig, Bonn, Germany.] Feeding habits of nestlings.

Boecker, M. BEZIEHUNGEN ZWISCHEN NISTMATERIAL UND UMGEBUNGSVEGETATION DER NESTER BEI DER FLUSSSEESCHWALBE. [RELATIONSHIPS BETWEEN THE NESTING MATERIAL AND THE SURROUNDING VEGETATION OF THE NESTS OF THE COMMON TERN.] *Bonner Zool. Beitr.* 20(1-3): 125-129, illus. 1969. [From Biol. Abstr. 51(16), 1970. In German with English summ.] *WR 140: 180*
[Zool. Mus. Alexander Koenig, Bonn, Germany.]

Bols Woodcock Club. DRAAGT DE HOUTSNIP HAAR JONG? [DOES THE WOODCOCK CARRY ITS YOUNG?] *Bols Snippen Club.* 31 p., illus. Sept. 1970. Text in Dutch, French, German, and English. *WR 140: 181*

An analysis of 75 positive replies to this question received from Sweden, Great Britain, France, Belgium, the Netherlands, Germany, the USA, and Canada. *"Scolopax rusticola* and *Philohela minor."*

Bongiorno, Salvatore F. NEST-SITE SELECTION BY ADULT LAUGHING GULLS *(LARUS ATRICILLA). Animal Behaviour* 18(3): 434-444, 6 figs. Aug. 1970. *WR 140: 181*

[La. State Univ., New Orleans.] Most nests were found where the marsh table was elevated about 0.0 to 0.2 m above mean high water with *Spartina alterniflora* taller than 0.6 m present. Birds did not nest in areas where the grass had been cut, although records of the two preceding years showed that the birds had nested in the same areas. Orientation to the highest part of the marsh and tall grasses had survival value during flooding.--From summ.

Bruch, Achim, and Martin Löschau. ZUM VORKOMMEN DER LIMIKOLEN IM BERLINER RAUM. [ON THE OCCURRENCE OF SHOREBIRDS IN THE BERLIN AREA.] *Ornithol. Mitteil.* 22(8): 157-163, 3 figs. Aug. 1970. In German. *WR 140: 181*

[Hummlingweg 6, Berlin, Germany.]

Cabot, D. HELMINTH PARASITES FROM CHARADRIIFORM BIRDS AT GALWAY BAY, CO. GALWAY. *Proc. R. Ir. Acad.* 68(B): 149-159. 1969. [From Ibis 112(4), 1970.] *WR 140: 181*

Campbell, R. Wayne. OCCURRENCE AND NESTING OF BLACK TERNS IN SOUTHWESTERN BRITISH COLUMBIA. *Condor* 72(4): 500. Oct. 1970. *WR 140: 181*

[301-621 Gilbert Rd., Richmond, British Columbia, Canada.] Courtesy/ Paul A. Stewart.

Carpenter, Roger E., and Mary A. Stafford. THE SECRETORY RATES AND THE CHEMICAL STIMULUS FOR SECRETION OF THE NASAL SALT GLANDS IN THE RALLIDAE. *Condor* 72(3): 316-324, 4 figs. July 1970. *WR 140: 181*

[San Diego State Coll., San Diego, Calif.] Discusses cloacal elimination of salts, concentration of nasal secretion, stimulus responsible for salt gland excretion, and rates of salt excretion in *Fulica americana* and *Rallus owstoni.*--Courtesy/ Paul A. Stewart.

Chaniot, George E., Jr. NOTES ON COLOR VARIATION IN DOWNY CASPIAN TERNS. *Condor* 72(4): 460-465, 1 fig. Oct. 1970. *WR 140: 181*

[938 Oxford, Berkeley, Calif.] Color variations, frequencies of the various color types, and the possible selective pressures influencing these frequencies are discussed.--Courtesy/ Paul A. Stewart.

Clark, Eldon R. WOODCOCK STATUS REPORT, 1969. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 133. iv + 35 p., 6 figs. June 1970. For sale by Supt. Documents at 45¢. *WR 140: 181*

[Migratory Bird Populetions Sta., Laurel, Md.] The 1969 singing-ground survey, in which 90% of the comparable routes were randomly located, indicated an increase in the breeding population of 4.22% in the Eastern Region, 12.14% in the Western Region, and 8.82% on a rangewide basis. The 1968-69 wing-collection survey suggested an increase in productivity of 5.36%, the first noticeable improvement since 1961-62. Daily harvest per hunter increased slightly in 1968-69 for the second consecutive year, but the seasonal harvest per hunter did not change.--From abstr.

Clausager, I. [WOODCOCK.] *Dansk Vildtforsk.* 1968-69: 13-19. 1969. [From Ibis 112(2), 1970. In Danish.] *WR 140: 181*

Breeding season of *Scolopax rusticola* extends from March to September. Between 18,000 and 35,000 have been shot in Denmark annually since 1951.

Collins, Charles T. THE BLACK-CROWNED NIGHT HERON AS A PREDATOR OF TERN CHICKS. *Auk* 87(3): 584-586. July 1970. *WR 140: 182*
[Calif. State Coll., Long Beach.] *"Nyaticorax nyaticorax."*--Courtesy/ Paul A. Stewart.

Crossin, Richard S., and Lawrence N. Huber. SOOTY TERN EGG PREDATION BY RUDDY TURNSTONES. *Condor* 72(3): 372-373. July 1970. *WR 140: 182*
[Smithsonian Inst., Washington, D.C.] *Sterna fuscata* and *Arenaria interpres* on "Janet" Island, Marshall Islands.--Courtesy/ Paul A. Stewart.

Curber, R. M., and Bernard King. ABNORMAL NEST OF MOORHENS. *British Birds* 63(8): 339. 1970. *WR 140: 182*
[11 Weatherly Ave., Odd Down, Bath, Somerset, England.] *"Gallinula chloropus."*

Davis, Frederic W. TERRITORIAL CONFLICT IN THE AMERICAN WOODCOCK. *Wilson Bull.* 82(3): 327-328. Sept. 1970. *WR 140: 182*
[Fitchburg State Coll., Fitchburg, Mass.] Two male *Philohela minor* on adjacent singing grounds engaged in mid-air contact, fell 50 to 75 feet while still locked together, then broke apart. One bird flew off in straight level flight, closely pursued by the other. Five minutes later one bird returned and alternately used both singing grounds for the next two days.--Courtesy/ Paul A. Stewart.

Dickerman, Robert W., and Gonzalo Gavino T. STUDIES OF A NESTING COLONY OF GREEN HERONS AT SAN BLAS, NAYARIT, MEXICO. *Living Bird* 8: 95-111, 9 figs. 1969. *WR 140: 182*
[Cornell Univ. Med. Coll., New York, N.Y.] Nesting in the colony was directly associated with the flooding season of the mangrove areas utilized by the 157 pairs of *Butorides virescens* studied. Included in the study was nest construction, height of nests, and distance apart within the quadrat. The color, weights, and measurements of eggs; the daily rhythm of laying; the possibility of a second clutch in the same nest; the clutch size; and the ability of the green heron to incubate large clutches under experimental conditions was recorded. Incubation, periods of hatching, the care of the eggs and young, and the causes of desertion were observed. The final section deals with nesting success.--From summ.

Din, N. A., and S. K. Eltringham. THE LESSER FLAMINGO IN WESTERN UGANDA. *East African Wildl. J.* 8: 201. Aug. 1970. *WR 140: 182*

Drost, R. DRESSUR VON SILBERMÖWEN, *LARUS ARGENTATUS*, AUF AKUSTICHE SIGNALE. [TRAINING OF SILVER GULLS, *LARUS ARGENTATUS*, WITH ACOUSTIC SIGNALS.] *Vogelwarte* 24: 185-187. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 182*

Drury, W. H., and I. C. T. Nisbet. STRATEGY OF MANAGEMENT OF A NATURAL POPULATION: THE HERRING GULL IN NEW ENGLAND. *Proc. World Conf. Bird Hazards Airports / Kingston, Ontario / Sept. 1969.* p. 441-454. [1970.] *WR 140: 182*
[Mass. Audubon Soc., Lincoln.] *"Larus argentatus."*

Dunker, Henning. BESTANDSENDRINGER HOS HEILO, *PLUVIALIS APRICARIA*, 1963-67. [FLUCTUATION IN A POPULATION OF GOLDEN PLOVER, *PLUVIALIS APRICARIA*, 1963-1967.] *Fauna* 22(3): 201-206, illus. 1969. [From Biol. Abstr. 51(20), 1970. In Norwegian with English summ.] *WR 140: 182*
[Univ. Blindern, Blindern, Norway.]

Enemar, A. [THE CORN-CRAKE *CREX CREX* IN SWEDEN IN 1968.] *Vår Fågelvärld* 28: 194-198. 1969. [From Auk 87(3), 1970. In Swedish with English summ.] *WR 140: 182*

Erard, Christian, and Pierre Petit. LA GRUE CENDRÉE. [THE GRAY CRANE.] *Courr. Nature Homme & Oiseau* 11: 99-105, illus. 1969. [From Biol. Abstr. 51(19), 1970. In French.] *WR 140: 183*

Erz, W. METHODEN ZUR ERLANGUNG VON BRUT- UND NAHRUNGSÖKOLOGISCHEN DATEN AUS EINER GRAUREIHER-KOLONIE. [METHODS OF ACQUIRING BREEDING AND FEEDING ECOLOGY DATA FROM A GRAY HERON COLONY.] *Vogelwelt* 89: 175-178. [1968.] [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 183*
"Ardea cinerea."

Evans, Roger M., David B. Krindle, and Mark E. Mattson. CASPIAN TERNS NESTING NEAR SPRUCE ISLAND, LAKE WINNIPEGOSIS, MANITOBA. *Blue Jay* 28(2): 68-71, 3 figs. June 1970. *WR 140: 183*
[Univ. Manitoba, Winnipeg, Manitoba, Canada.] Information on breeding sites, clutch size, hatching time and feeding behavior of young *Hydroprogne caspia* is presented.

Evans, Roger M. PARENTAL RECOGNITION AND THE "MEW CALL" IN BLACK-BELLIED GULLS *(LARUS BULLERI)*. *Auk* 87(3): 503-513, 2 figs. July 1970. *WR 140: 183*
[Univ. Manitoba, Winnipeg, Manitoba, Canada.] Food-deprived chicks of from 2-3 days of age approached mew calls emitted by a loudspeaker more rapidly than did parent-fed controls. Colony-reared chicks of the same age also approached mew calls of their own parents more rapidly than did chicks from other broods, and tended to cheep preferentially to parental calls, thereby indicating an early development of parental mew call recognition by the young.--From summ. Courtesy/ Paul A. Stewart.

Focke, E. ZUM VERHALTEN JUNGER SILBERMÖWEN *(LARUS ARGENTATUS)* BEI BEDROHUNG DURCH ADULTE ARTGENOSSEN. [BEHAVIOR OF YOUNG SILVER GULLS *(LARUS ARGENTATUS)* THREATENED BY ADULT CONSPECIFICS.] *Vogelwarte* 24: 262-266. 1968. [From Auk 87(3), 1970. In German.] *WR 140: 183*

Friend, Milton, and Daniel O. Trainer. ASPERGILLOSIS IN CAPTIVE HERRING GULLS. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 271-275, 2 figs. July 1969. *WR 140: 183*
[Univ. Wis., Madison.] Abstract: Aspergillosis was diagnosed as the cause of mortality during an epizootic in which 32 of 140 captive herring gulls *(Larus argentatus)* died. The cause of disease was attributed to the individual or cumulative stresses of capture, transportation, confinement, and a nutritional deficiency allowing subclinical levels of *Aspergillus fumigatus* fungi present in the gulls at the time of capture to produce overt disease.

Goethe, F. ZUR EINWANDERUNG DER LACHMÖWE, *LARUS RIDIBUNDUS*, IN DAS GEBIET DER DEUTSCHEN NORDSEEDKUSTE UND IHRER INSELN. [ON THE MIGRATION OF THE GULL, *LARUS RIDIBUNDUS* INTO THE AREA OF THE GERMAN NORTH SEA COAST AND ITS ISLANDS.] *Bonner Zool. Beitr.* 20(1-3): 164-170, illus. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 183*
[Inst. Vogelforschung, Wilhelmshaven, Germany.]

Goudy, William H., Robert C. Kletzly, and Joseph C. Rieffenberger. CHARACTERISTICS OF A HEAVILY HUNTED WOODCOCK POPULATION IN WEST VIRGINIA. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 183-195, 4 figs. 1970. *WR 140: 183*
[W. Va. Dept. Nat. Resources, Morgantown.]

Greenwood, J. J. D., and J. D. Goss-Custard. THE RELATIVE DIGESTIBILITY OF THE PREY OF REDSHANK *TRINGA TOTANUS*. *Ibis* 112(4): 543-544. Oct. 1970. *WR 140: 183*
[Univ. Dundee, Dundee, Scotland.] The relative digestibility of *Corophium* and *Hydrobia* does not vary with changes in proportions of the two prey species.

Hamilton, Robert Bruce. COMPARATIVE BEHAVIOR OF THE AMERICAN AVOCET *(RECURVIROSTRA AMERICANA)* AND THE BLACK-WINGED STILT *(HIMANTOPUS H. MEXICANUS). Ph.D. thesis, Univ. Calif.* (Berkeley). 280 p. 1969. [From Dissertation Abstr. Intern. 31(1B), 1970.] *WR 140: 184*

Harris, M. P. ABNORMAL MIGRATION AND HYBRIDIZATION OF *LARUS ARGENTATUS* AND *L. FUSCUS* AFTER INTERSPECIES FOSTERING EXPERIMENTS. *Ibis* 112(4): 488-498, 3 figs. + 2 pls. Oct. 1970. *WR 140: 184*
[Univ. Oxford, Oxford, England.] During the period 1962-1966 eggs of *Larus argentatus* and *L. fuscus* were interchanged; nearly 900 young were reared by the wrong species. Cross-fostered *fuscus* migrated although their foster parents are sedentary. Although interbreeding is exceedingly rare, 31 and 40 mixed pairs raised young in 1968 and 1969.--From summ.

Harris, M. P. TERRITORY LIMITING THE SIZE OF THE BREEDING POPULATION OF THE OYSTERCATCHER *(HAEMATOPUS OSTRALEGUS)*--A REMOVAL EXPERIMENT. *J. Animal Ecol.* 39(3): 707-713, 1 fig. Oct. 1970. *WR 140: 184*
[Univ. Oxford, Oxford, England.]

Havens, Phillip D. ABERRATION IN THE CLUTCH SIZE OF THE SEMIPALMATED PLOVER. *Condor* 72(4): 481. Oct. 1970. *WR 140: 184*
[Alaska Dept. Fish & Game, Anchorage.] The nest contained five eggs.--Courtesy/ Paul A. Stewart.

Hawkins, A. F. INCUBATING MOORHEN REPEATEDLY PULLING COVER OVER ITSELF IN RAIN. *British Birds* 63(1): 33-34. 1970. *WR 140: 184*
[Univ. Leeds, Leeds, England.] *"Gallinula chloropus."*

Heckenroth, H. BEOBACHTUNGEN ÜBER DIE RECHTSWENDUNG DES WEGZIEHENDEN WEISSSTORCHS AM GOLF VON ISKENDERUN. [OBSERVATIONS OF THE CORRECT TURNING OF THE WHITE STORK ON THE GULF OF ISKENDERUN.] *Vogelwarte* 24: 246-262. 1968. [From Auk 87(3), 1970. In German with English summ.] *WR 140: 184*

Höfmann, H., and H. Hoerschelmann. NAHRUNGSUNTERSUCHUNGEN BEI LIMIKOLEN DURCH MAGENINHALTSANALYSEN. [FEEDING-HABITS INVESTIGATION OF THE WADERS BY STOMACH CONTENTS ANALYSIS.] *Corax* 3: 7-22. 1969. [From Ibis 112(4), 1970. In German.] *WR 140: 184*

Holyoak, D. T. MOORHEN DELIBERATELY PLUCKING ITS OWN FLIGHT-FEATHERS. *British Birds* 63(8): 339-340. 1970. *WR 140: 184*
[13 Ellison Road, London, England.] *"Gallinula chloropus."*

Ingolfsson, Agnar. HYBRIDIZATION OF GLAUCOUS GULLS *LARUS HYPERBOREUS* AND HERRING GULLS *L. ARGENTATUS* IN ICELAND. *Ibis* 112(3): 340-362, 6 figs. + 2 pls. July 1970. *WR 140: 184*
[Southeastern Mass. Univ., North Dartmouth.]

Ingolfsson, Agnar. THE MOULT OF REMIGES AND RECTRICES IN GREAT BLACK-BACKED GULLS *LARUS MARINUS* AND GLAUCOUS GULLS *L. HYPERBOREUS* IN ICELAND. *Ibis* 112(1): 83-92. Jan. 1970. *WR 140: 184*
[Southeastern Mass. Univ., North Dartmouth.] There are no marked differences between the two gulls in the molt of primaries and secondaries. The molt of rectrices shows large variations in both species, some feathers being much more irregular than others in their time of shedding. In both species, indications of an obscured centrifugal pattern of replacement are seen, although the 5th (next to the outermost) retrix is usually the last one to be shed.--From summ.

Józefik, M. CASPIAN TERN, *HYDROPOGNE CASPIA* PALL. IN POLAND--THE BIOLOGY OF MIGRATION PERIOD. *Acta Ornithol.* 11: 381-443. 1969. [From Ibis 112(4), 1970.] *WR 140: 184.*
[Polish Acad. Sci., Warsaw, Poland.]

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Józefik, Mieczysław. STUDIES ON THE SQUACCO HERON, *ARDEOLA RALLOIDES* (SCOP.): PART I. HISTORY OF RESEARCH. *Acta Ornithol.* (Warsaw) 11(6): 103-134. 1969. [From Biol. Abstr. 51(15), 1970. In English with Polish and Russian summ.] *WR 140: 185*
[Polish Acad. Sci., Warsaw, Poland.]

Józefik, M. STUDIES ON THE SQUACCO HERON, *ARDEOLA RALLOIDES* (SCOP). PART II. SECULAR CHANGES IN THE NUMBERS AND DISTRIBUTION IN THE PALAEARCTIC RANGE. *Acta Ornithol.* 11: 135-262. 1969. [From Ibis 112(3), 1970. In English with Russian and Polish summ.] *WR 140: 185*
[Polish Acad. Sci., Warsaw, Poland.]

Józefik, Mieczysław. STUDIES ON THE SQUACCO HERON, *ARDEOLA RALLOIDES* (SCOP.): III. GEOGRAPHICAL VARIABILITY IN THE CRITICAL AND MEAN MICRO-POPULATION SIZE. *Acta Ornithol.* 12(3): 57-102, illus. 1970. [From Biol. Abstr. 51(20), 1970. In English with Polish and Russian summ.] *WR 140: 185*
[Polish Acad. Sci., Warsaw, Poland.]

Keve, A., and others. ÜBER DIE AREALVERÄNDERUNGEN DES SICHLERS, *PLEGADIS FALCINELLUS* (L.). [ON THE MOVEMENTS OF THE GLOSSY IBIS, *PLEGADIS FALCINELLUS* (L.).] *Abh. Ber. Mus. Tierk. Dresden* 29: 159-175. 1968. [From Ibis 112 (4), 1970. In German.] *WR 140: 185*

Kobus, Dieter. SONDERBARES VERHALTEN DER TEICHRALLE *(GALLINULA CHLOROPUS)* AM NEST. [UNUSUAL BEHAVIOR OF THE GALLINULE *(GALLINULA CHLOROPUS)* AT THE NEST.] *Ornithol. Mitteil.* 22(8): 164-165. Aug. 1970. In German.
WR 140: 185

Krohn, William B. WOODCOCK FEEDING HABITS AS RELATED TO SUMMER FIELD USAGE IN CENTRAL MAINE. *J. Wildl. Mgmt.* 34(4): 769-775, 2 figs. Oct. 1970.
WR 140: 185
[Univ. Maine, Orono.]

Kroymann, B. DER DURCHZUG DER SCHNEPFEN *(GALLINAGO, LYMNOCRYPTES, SCOLOPAX)* IM KREIS TÜBINGEN. [THE MIGRATION OF SNIPE *(GALLINAGO, LYMNO-CRYPTES,* AND *SCOLOPAX)* IN THE TÜBINGEN DISTRICT.] *Vogelwelt* 89: 81-101. 1968. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 185*

Lippens, L., and H. Wille. LE HERON BIHOREAU *NYCTICORAX N. NYCTICORAX* EN BELGIQUE ET EN EUROPE OCCIDENTALE. [THE NIGHT HERON *NYCTICORAX N. NYC-TICORAX* IN BELGIUM AND IN WESTERN EUROPE.] *Gerfaut* 59: 123-156. 1969. [From Ibis 112(3), 1970. In French with English summ.] *WR 140: 185*

Lohmer, K., and G. Vauk. NAHRUNGSÖKOLOGISCHE UNTERSUCHUNGEN AN ÜBER-SOMMERNDEN SILBERMÖWEN *(LARUS ARGENTATUS)* AUF HELGOLAND IM AUGUST/SEPTEMBER 1967. [ECOLOGICAL INVESTIGATIONS ON THE FOOD OF HERRING GULLS *(LARUS ARGENTATUS)* SPENDING THE SUMMER ON HELGOLAND IN AUGUST/SEPTEMBER 1967.] *Bonner Zool. Beitr.* 20(1-3): 110-124, illus. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 185*
[Inselst. Helgoland, Inst. Vogelforschung, Wilhelmshaven, Germany.]

Maximilian, Boecker. DER "FUETTERUNGSERFOLG" BEI FLUSS UND KUESTENSEE-SCHWALBE *(STERNA HIRUNDO* UND *S. PARADISAEA).* ["FEEDING SUCCESS" OF COMMON AND ARCTIC TERN *(STERNA HIRUNDO* AND *S. PARADISAEA).*] *Vogelwelt* 89(6): 221-224. 1968. [From Biol. Abstr. 51(20), 1970. In German with English summ.]
WR 140: 185
[Zool. Forschungsinst. & Mus. Alexander Koenig, Bonn, Germany.]

Mebs, Th. DER BESTAND DES WEISSSTORCHS *(CICONIA CICONIA)* IN FRANKEN 1965-1967 IM VERGLEICH MIT DEN ERGEBNISSEN FRUEHERER ZAEHLUNGEN. [THE CENSUS OF THE WHITE STORK *(CICONIA CICONIA)* IN FRANCONIA 1965-1967 IN COMPARISON WITH RESULTS OF EARLIER COUNTS.] *Ans. Ornithol. Ges. Bayern.* 8(5): 463-472. 1969. [From Biol. Abstr. 51(20), 1970. In German with English summ.] *WR 140: 186*
[2441 Weissenhaus/Ostsee, Oldenburg, Germany.]

Merilees, W. J. LONGEVITY OF DOMINICAN GULLS. *Australian Bird Bander* 7(3): 60-61. 1969. [From Bird-Banding 41(2), 1970.] *WR 140: 186*
"Larus dominicanus."

Mills, J. A. THE DISTRIBUTION OF BREEDING RED-BILLED GULL COLONIES IN NEW ZEALAND IN RELATION TO AREAS OF PLANKTON ENRICHMENT. *Notornis* 16: 180-185. 1969. [From Auk 87(3), 1970.] *WR 140: 186*
"Larus novaehollandiae."

Nehls, Hans Wolfgang. ZUR UMSIEDLUNG, BRUTORTSTREUE UNG BRUTRIFE DER BRANDSEESCHWALBE *(STERNA SANDVICENSIS)* NACH RINGFUNDEN AUF LANGENWERDER. [RESETTLEMENT, CONSTANT BREEDING PLACE AND BREEDING MATURITY OF THE SANDWICH TERN *(STERNA SANDVICENSIS)* ACCORDING TO RINGED BIRDS IN LANGENWERDER. *Vogelwarte* 25(1): 52-57. 1969. [From Biol. Abstr. 51(15), 1970. In German.] *WR 140: 186*

Olney, P. J. S. STUDIES OF AVOCET BEHAVIOUR. *British Birds* 63(5): 206-209 + 8 pls. 1970. *WR 140: 186*
[Zool. Soc. London, Regent's Park, London, England.] Aggressive groupings of avocets appear to strengthen pair bonds and often serve as part of the precopulatory display.

Onno, S. [THE SPAN OF LIFE OF THE COMMON GULL AND THE AGE STRUCTURE OF ITS POPULATION IN ESTONIA.] *Communications of the Baltic Commission for the Study of Bird Migration* 5: 81-109. 1968. [From Ibis 112(2), 1970. In Russian with English summ.] *WR 140: 186*
"Larus canus."

Page, G., and A. Salvadori. WEIGHT CHANGES OF SEMIPALMATED AND LEAST SANDPIPERS PAUSING DURING AUTUMN MIGRATION. *Ontario Bird Banding* 5(2): 52-58. 1969. [From Bird-Banding 41(3), 1970.] *WR 140: 186*

Parmalee, D. F., M. D. Schwilling, and H. A. Stevens. CHARADRIIFORM BIRDS OF CHEYENNE BOTTOMS, PARTS 1 AND 2. *Kans. Ornithol. Soc. Bull.* 20: 9-13, 17-24. 1969. [From Auk 87(3), 1970.] *WR 140: 186*

Parsons, J. RELATIONSHIP BETWEEN EGG SIZE AND POST-HATCHING CHICK MORTALITY IN THE HERRING GULL *(LARUS ARGENTATUS)*. *Nature* 228(5277): 1221-1222, 1 fig. 19 Dec. 1970. *WR 140: 186*
[Fisheries Lab., Stormont, Belfast, Ireland.]

Patnik, M. M., A. T. Rao, L. N. Acharjyo, and D. N. Mohanty. NOTES ON A NODULAR DISEASE OF THE INTESTINE OF THE OPEN-BILLED STORK--*(ANASTOMUS OSCITANS)* CAUSED BY *CHAUNOCEPHALUS FEROX*. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 64-66, 3 figs. Jan. 1970. *WR 140: 186*
[State Vet. Lab., Bhubaneswarz, India.]

Pearson, D. J., J. H. Phillips, and G. C. Backhurst. WEIGHTS OF SOME PALAEARCTIC WADERS WINTERING IN KENYA. *Ibis* 112(2): 199-208, 3 figs. Apr. 1970. *WR 140: 186*
[Brouses, Sibton, Saxmundham, Suffolk, England.] Summary: Palaearctic waders were caught and weighed at Lake Nakuru in the Kenyan rift valley on 22 occasions in the non-breeding season between March 1967 and May 1969.

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The weights of four species are presented: curlew sandpiper, little stint, ruff and marsh sandpiper. Winter weights were relatively low and varied little. It is thought that waders had very little fat reserve at this time. The mean weights of early autumn samples tended to be higher than corresponding mean winter weights, and autumn populations included some markedly heavy birds. An increase in the mean weight, and a dramatic rise in the maximum weights of each species occurred shortly before its main spring departure time. The great majority of waders apparently gained considerable weight before migration from the area in April and May. The spring migration of waders from Kenya is briefly discussed.

Pilaski, J. ÜBER DAS ABFALLFRESSEN DER SEESCHWALBEN *(STERNA, CHLIDONIAS).* [THE TAKING OF FLOATING OFFAL BY TERNS *(STERNA, CHLIDONIAS).*] *Vogelwelt* 89: 14-20. 1968. [From Ibis 112(4), 1970. In German.] *WR 140: 187*

Post, William, and Frank Enders. NOTES ON A SALT MARSH VIRGINIA RAIL POPULATION. *Kingbird* 20(2): 61-67, 2 figs. May 1970. *WR 140: 187*

[N.C. State Univ., Raleigh.] A population estimate was made of Virginia rails by spot-mapping birds and nests. A population density of 1.2 pair per hectare was determined. Nesting was in *Spartina alterniflora*, with nests suspended above the mud, but still not immune to flooding. The species may have been more common in salt marshes in the past, before the advent of mosquito control ditching.--From summ.

Pracy, L. T. WEKA LIBERATIONS IN THE PALLISER BAY REGION. *Notornis* 16: 212-213. 1969. [From Auk 87(3), 1970.] *WR 140: 187*

"Ocydromus, a flightless New Zealand rail."

Pratt, Helen M. BREEDING BIOLOGY OF GREAT BLUE HERONS AND COMMON EGRETS IN CENTRAL CALIFORNIA. *Condor* 72(4): 407-416, 12 figs. Oct. 1970. *WR 140: 187*

[337 Jean St., Mill Valley, Calif.] Duration of the nesting season, location of nests, numbers of breeding pairs, egg laying intervals, incubation, brooding of young, feeding young, development of young, and nestling mortality for *Ardea herodias* and *Casmerodius albus* are discussed.--Courtesy/ Paul A. Stewart.

Pulliainen, Erkki. ON THE BREEDING BIOLOGY OF THE DOTTEREL *CHARADRIUS MORINELLUS. Ornis Fennica* 47(2): 69-73. 1970. In English with Finnish summ. *WR 140: 187*

[Univ. Helsinki, Viikki, Helsinki, Finland.] Regular observations of six nests during spring-summer 1969.

Rossi, Jose A. Haedo. NOTAS ORNITOLOGICAS IV UN CASO DE INCUBACIÓN DE PIEDRAS POR LA GALLINETA DE CASCO O POLLONA. [CONSTRUCTION OF A FALSE NEST OF STONES AND ATTEMPTED INCUBATION OF STONES BY A PAIR OF *GALLINULA CHLOROPUS GALEATA* LICHTENSTEIN.] *Acta Zool. Lilloana* 25(3): 15-16, illus. 1969. [From Biol. Abstr. 51(22), 1970. In Spanish with English summ.] *WR 140: 187*

[Univ. Nacl., Fund. Inst. Miguel Lille, Tucuman, Argentina.]

Rossi, Jose A. Haedo. OBSERVACIONES SOBRE LA CIGUENA *EUXENURA MAGUARI* (GMELIN). [OBSERVATIONS ON THE MAGUARI STORK, *EUXENURA MAGUARI* (GMELIN).] *Acta Zool. Lilloana* 25(4): 21-24, illus. 1969. [From Biol. Abstr. 51(17), 1970. In Spanish with English summ.] *WR 140: 187*

[Univ. Nacl., Fund. Inst. Miguel Lille, Tucuman, Argentina.]

Roux, G., and W. Thönen. LA NIDIFICATION DU GOÉLAND ARGENTÉ *LARUS ARGENTATUS MICHAHELLIS* AU FANEL. [NIDIFICATION OF THE HERRING GULL *LARUS ARGENTATUS MICHAHELLIS* ON AN ISLAND OF FANEL BAY.] *Nos Oiseaux* 29(321): 335-338, illus. 1968. [From Biol. Abstr. 51(24), 1970. In French.] *WR 140: 187*

[179 Kirchstr., Wabern, Switzerland.]

Sach, G. DIE MAUSER DES GROSSEN BRACHVOGELS, *NUMENIUS ARQUATA*. [THE MOLTING OF THE GREAT CURLEW, *NUMENIUS ARQUATA*.] *J. Ornithol.* 109: 485-511. 1968. [From Auk 87(3), 1970. In German with English summ.] *WR 140: 188*

Sage, B. L. THE WINTER POPULATION OF GULLS IN THE LONDON AREA. *London Bird Rept.* no. 33 (1968): 67-80. 1970. [From Ibis 112(4), 1970.] *WR 140: 188*

Schlegel, Reiner. WEITERER BEITRAG ZUR NAHRUNG DES GRAUREIHERS *(ARDEA CINEREA* L.*)* AN OBERLAUSITZER KARPFENTEICHEN. [THE FEEDING HABITS OF THE HERON *ARDEA CINEREA* L. IN UPPER LUSATIA CARP PONDS.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 29: 21-23. 1967/1968. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 188*

Schmidt, Christian R. NOTIZEN ZUR ZUCHT DES PARADIESKRANICHS *(ANTHROPOIDES PARADISEA)*. [NOTES ON THE BREEDING OF THE STANLEY CRANES *(ANTHROPOIDES PARADISEA).*] *Zool. Gart.* 36(4/5): 186-190, illus. 1969. [From Biol. Abstr. 51(15), 1970. In German with English summ.] *WR 140: 188*
[Zool. Gart., Zurich, Switzerland.]

Siegfried, W. R. MORTALITY AND DISPERSAL OF RINGED CATTLE EGRETS. *Ostrich* 41(1/2): 122-135, illus. 1970. [From Biol. Abstr. 51(23), 1970.] *WR 140: 188*
[Univ. Cape Town, Rondebosch, Cape Town, South Africa.]

Smail, John. ESTUARIES AND THE ECOLOGY OF SHOREBIRDS. *Trans. 35th N. Am. Wildl. & Nat. Resources Conf.* p. 258-265, 1 fig. 1970. *WR 140: 188*
[Point Reyes Bird Observatory, Bolinas, Calif.]

Southern, William E. SKY CONDITIONS IN RELATION TO RING-BILLED AND HERRING GULL ORIENTATION. *Ill. State Acad. Sci.* 62(4): 342-349, 6 figs. 1969. *WR 140: 188*
[Northern Ill. Univ., Dekalb.] Abstract: The homing behavior of 379 ring-billed and 50 herring gulls was contrasted with sky conditions that existed at release times. No evidence was obtained that supported the use of sun or stars as orientational cues. Gulls responded to topographical features during some trials. Juvenile ring-billed gulls showed directional preferences that correspond to headings required to reach the population's winter range.

Spitz, Francois. REMARKS ABOUT POPULATION STRUCTURE OF SOME WADER SPECIES CAUGHT IN VENDÉE, ATLANTIC COAST OF FRANCE. *VIII Intern. Congr. Game Biol.* p. 380-381. 1970. In English with Russian summ. *WR 140: 188*
[Lab. Vertebres, Jouy-en-Josas, France.]

Stamm, R. A. ZUM BEGATTUNGSVERHALTEN DER LACHMÖWE *(LARUS RIDIBUNDUS* LINNAEUS, 1966: AVES, LARIDAE*)*. [ON THE COPULATORY BEHAVIOR OF THE BLACK-HEADED GULL *(LARUS RIDIBUNDUS).*] *Verh. Dt. Zool. Ges.* (1968): 318-324. [1968.] [From Ibis 112(4), 1970. In German.] *WR 140: 188*

Tets, G. F. SEASONAL FLUCTUATIONS IN THE MORTALITY RATES OF THREE NORTHERN- AND THREE SOUTHERN-HEMISPHERE GULLS. *CSIRO Wildl. Res.* 13(1): 1-9. 1968. [From Bird-Banding 41(3), 1970.] *WR 140: 188*

Thomas, D. G. FLUCTUATION OF NUMBERS OF WADERS IN SOUTH-EASTERN TASMANIA. *Emu* 70(2): 79-85, 3 figs. May 1970. *WR 140: 188*
[9 Lallaby Road, Moonah, Tasmania.]

Thomas, D. G., and A. J. Dartnall. PRE-MIGRATORY DEPOSITION OF FAT IN THE RED-NECKED STINT. *Emu* 70(2): 87. May 1970. *WR 140: 188*
[9 Lallaby Road, Moonah, Tasmania.] *"Calidris ruficollis."*

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Thomas, D. G. WADER MIGRATION ACROSS AUSTRALIA. *Emu* 70(4): 145-154, 2 figs. Oct. 1970. *WR 140: 189*
[9 Lallaby Road, Moonah, Tasmania.] Rate of fall-out is low, particularly on spring passage and when crossing the central region, which contains the most inhospitable areas of the continent. A list of species has been compiled to show the incidence of waders in Australia. All inland occurences in Tasmania are between August and May.

Thompson, Max C. BAND WEAR ON RUDDY TURNSTONES. *Bird-Banding* 41(3): 241-242. July 1970. *WR 140: 189*
[Southwestern Coll., Winfield, Kans.] Bands made with Incoloy, a nickel alloy, wear longer and do not corrode.--Courtesy/ Paul A. Stewart.

Thompson, Richard L. FLORIDA SANDHILL CRANE NESTING ON THE LOXAHATCHEE NATIONAL WILDLIFE REFUGE. *Auk* 87(3): 492-502, 6 figs. July 1970. *WR 140: 189*
[Bur. Sport Fisheries & Wildl., P.O. Box 190, Tallahassee, Fla.] Nests of Florida sandhill cranes *(Grus canadensis pratensis)* and their locations are described. Nesting occurred between late December and late April, with 70% hatching success.--Courtesy/ Paul A. Stewart.

Thonen, Willi. AUFFALLENDER UNTERSCHIED ZWISCHEN DEN INSTRUMENTALEN BALZLAUTEN DER EUROPÄISCHEN UND NORDAMERIKANISCHEN BEKASSIN *GALLINAGO GALLINAGO.* [THE APPARENT DIFFERENCE BETWEEN THE INSTRUMENTAL PAIRING-TIME SOUND OF THE EUROPEAN AND THE NORTH AMERICAN SNIPES *GALLINAGO GALLINAGO.*] *Ornithol. Beob.* 66(1): 6-13. 1969. [From Biol. Abstr. 51(17), 1970. In German with English summ.] *WR 140: 189*

Threlfall, William. A PRELIMINARY CHECK LIST OF THE HELMINTH PARASITES OF THE COMMON SNIPE, *CAPELLA GALLINAGO* (LINNAEUS). *Am. Midland Nat.* 84(1): 13-19. July 1970. *WR 140: 189*
[Memorial Univ. Newfoundland, St. John's, Canada.] Abstract: The helminth parasites of the common snipe *(Capella gallinago)* are listed, with a bibliography and an indication of where, when and by whom the parasites were found.

Valentine, Jacob M., Jr., and Robert E. Noble. A COLONY OF SANDHILL CRANES IN MISSISSIPPI. *J. Wildl. Mgmt.* 34(4): 761-768, 1 fig. Oct. 1970. *WR 140: 189*
[Bur. Sport Fisheries & Wildl., Lafayette, La.]

Van Der Straaten, J., and R. Meijer. VOORKOMEN VAN DE KWARTELKONING *(CREX CREX)* IN HET STROOMBED VAN WAAL EN BOVEN-MERWEDE. [DISTRIBUTION OF THE CORN-CRAKE *(CREX CREX)* IN THE OUTER MARSHES OF THE RIVER WAAL AND UPPER MERWEDE (NETHERLANDS).] *Limosa* 42(1/2): 1-15, illus. 1969. [From Biol. Abstr. 51 (15), 1970. In Dutch with English summ.] *WR 140: 189*

Vermeer, Kees. BREEDING BIOLOGY OF CALIFORNIA AND RING-BILLED GULLS: A STUDY OF ECOLOGICAL ADAPTATION TO THE INLAND HABITAT. *Canadian Wildl. Serv., Rept. Ser.* no. 12. 52 p., 22 figs. 1970. In English with French summ. Price $1.25. *WR 140: 189*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] The breeding chronology, reproductive success, nesting habitat, food, and growth rates of California gulls *(Larus californicus)* and ring-billed gulls *(Larus delawarensis)* were studied at Miquelon Lake, Alberta, in 1964 and 1965. Few basic differences between gull species breeding inland and those breeding on the seacoast were found. Both species at Miquelon Lake are ground nesters like many coastal species. Growth and reproductive rates of the California and ring-billed gulls are similar to those of glaucous-winged gulls *(Larus glaucescens)* breeding on the coast of British Columbia. Apparent adaptations of the two species to breeding inland are the ability to exploit a seasonally abundant supply of rodents and a shortened breeding season. The results of an experiment to test the relationship of growth and survival to the time of hatching of California gull chicks did not show that the food supply governs the short breeding season.--From abstr.

Vermeer, Kees, and Gary G. Anweiler. GREAT BLUE HERON COLONIES IN SASKATCHEWAN IN 1970. *Blue Jay* 28(4): 158-161, 1 fig. Dec. 1970. *WR 140: 190*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.]

Wolff, W. J. DISTRIBUTION OF NON-BREEDING WADERS IN AN ESTUARINE AREA IN RELATION TO THE DISTRIBUTION OF THEIR FOOD ORGANISMS. *Ardea* 57: 1-28. 1969. [From Ibis 112(3), 1970.] *WR 140: 190*

Wuest, Walter. ZUR VERSTAEDTERUNG DES BLAESSHUHNS, *FULICA ATRA*, IN NYMPHENBURG. [THE URBANIZATION OF THE MUDHEN *FULICA ATRA* IN NYMPHENBURG.] *Bonner Zool. Beitr.* 20(1-3): 171-174. 1969. [From Biol. Abstr. 51(17), 1970. In German.] *WR 140: 190*
[Hohenlohest. 61, Munich, Germany.]

HAWKS & OWLS

Abbott, Jackson M. 1970 BALD EAGLE NEST SURVEY. *Atlantic Nat.* 25(4): 169-171, [2 figs.]. Winter 1970. *WR 140: 190*
The percent of active nests which hatched young in 1970 (32.6%) has declined from 1969 (40.8%). Fifty-two active nests produced 22 young.

Angell, Tony. A STUDY OF THE FERRUGINOUS HAWK: ADULT AND BROOD BEHAVIOR. *Living Bird* 8: 225-241, 7 figs. 1969. *WR 140: 190*
[7805 Southwest 201 Street, Edmonds, Wash.] The ferruginous hawk *(Buteo regalis)* displays behavioral patterns well suited to life in the upper sonoran and transition zone of Washington State. The ground nesting situation of this hawk made the brood accessible to the predation of the coyote, yet all of the young hawks fledged. Although the adults were rather indifferent to the presence of humans, the success of this eyrie was largely a result of what might be termed the hawk's "selective aggressiveness." Both birds roosted with the brood at night, and the male consistently held a sentinelling position during day. They displayed the ability to vigorously defend the nest against a predator as large as the adult male coyote. One of the young hawks, 33 days old, likewise was capable of taking the offensive and attacking a human intruder who stood between it and the nest. The two adult ferruginous hawks would not tolerate the presence of neighboring red-tailed hawks south of a large hill, a prominent point three-quarters of a mile north of the eyrie, that seemed to mark the residents' northern territorial boundary. Notes on feeding the brood, catching prey, and hunting behavior of adults are also included.--From summ.

Bährmann, Udo. ÜBER DAS VARIIEREN DES HABICHTS *(ACCIPITER GENTILIS GALLINARUM* BR.*)*. [THE VARIATION OF THE GOSHAWK *(ACCIPITER GENTILIS GALLINARUM* BR.*)*.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 28: 65-94, illus. 1965/1966. [From Biol. Abstr. 51(19), 1970. In German.] *WR 140: 190*

Blondel, J., L. Coulon, M. Girerd, and M. Hortique. DEUX CENTS HEURES D'OBSERVATION AUPRÈS DE L'AIRE DE L'AIGLE DE BONELLI *HIERAAËTUS FASCIATUS*. [TWO HUNDRED HOURS OF OBSERVATION BESIDE THE EYRIE OF A BONELLI'S EAGLE *HIERAAËTUS FASCIATUS*.] *Nos Oiseaux* 30: 37-60. 1969. [From Ibis 112(1), 1970. In French.] *WR 140: 190*

Burnham, Paul M. KESTREL ATTEMPTING TO PREY ON WEASELS. *British Birds* 63(8): 338. 1970. *WR 140: 190*
[1 Chestnut Close, Peakirk, Peterborough, Northamptonshire, England.]
"Falco tinnunculus."

Coon, N. C., and L. N. Locke. ASPERGILLOSIS IN A BALD EAGLE *(HALIAEETUS LEUCOCEPHALUS)*. *Bull. Wildl. Disease Assoc.* 4(2): 51. Apr. 1968. *WR 140: 190*
[Locke: Patuxent Wildl. Res. Center, Laurel, Md.]

XUM

Coon, N. C., L. N. Locke, E. Cromartie, and W. L. Reichel. CAUSES OF BALD EAGLE MORTALITY, 1960-1965. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 72-76. Jan. 1970. *WR 140: 191*
[Locke: Patuxent Wildl. Res. Center, Laurel, Md.]

Craddock, Donovan R., and Robert D. Carlson. PEREGRINE FALCON OBSERVED FEEDING FAR AT SEA. *Condor* 72(3): 375-376. July 1970. *WR 140: 191*
[Bur. Commercial Fisheries Biol. Lab., Seattle, Wash.] *"Falco peregrinus."*--Courtesy/ Paul A. Stewart.

Creutz, G. GELEGESTÄRKE UND JUNGENZAHL BEI DER ROHRWEIHE *(CIRCUS AERUGINOSUS).* [CLUTCH SIZE AND NUMBER OF YOUNG FOR THE MARSH HARRIER *(CIRCUS AERUGINOSUS).*] *Bonn. Zool. Beitr.* 19: 340-345. 1968. [From Ibis 112(2), 1970. In German.] *WR 140: 191*

Dunstan, Thomas C., and Melvin Borth. SUCCESSFUL RECONSTRUCTION OF ACTIVE BALD EAGLE NEST. *Wilson Bull.* 82(3): 326-327. Sept. 1970. *WR 140: 191*
[Western Ill. Univ., Macomb.] Three days after their original nest had been destroyed in a storm, two eaglets were accepted by their parents in a new "nest" constructed by the authors nearby.--Courtesy/ Paul A. Stewart.

Earhart, Caroline M., and Ned K. Johnson. SIZE DIMORPHISM AND FOOD HABITS OF NORTH AMERICAN OWLS. *Condor* 72(3): 251-264, 5 figs. July 1970. *WR 140: 191*
[Univ. Calif., Berkeley.] Among most species of owls females have heavier weights than do males. Preliminary information is presented suggesting that male pygmy owls *(Glaucidium gnoma)* feed more on birds while females primarily prey on mammals. Species of owls which feed predominantly on vertebrates show the greatest differences in body weights of the sexes; owls feeding on arthropods have small differences in body weights between sexes.--Courtesy/ Paul A. Stewart.

Ebert, Johannes. WANDERFALK TRAGT EI AUS DEM HORST. ZUM ANGEBLICHEN RÜCKGANG DER GELEGESTARKE DES MITTELEUROPÄISCHEN WANDERFALKEN *FALCO P. PEREGRINUS* GMEL. [A DUCK HAWK CARRIES AN EGG FROM THE NEST. ON THE REPORTED POPULATION DECREASE OF THE CENTRAL EUROPEAN DUCK HAWK *FALCO P. PEREGRINUS* GMEL.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 29: 65- . 1967/1968. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 191*

Edwards, Clyde C. WINTER BEHAVIOR AND POPULATION DYNAMICS OF AMERICAN EAGLES IN WESTERN UTAH. *Ph.D. thesis, Brigham Young Univ.* 157 p. [1969.] [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 191*
A three-year study on the winter ecology of golden eagles *(Aquila chrysaetos)* and bald eagles *(Haliaeetus leucocephalus)* was conducted. Special attention was given to population dynamics, food habits, and interspecific relations.

Ellis, Lon E., and Joe Kellett. EXPERIMENT WITH ARTIFICIAL NESTS. *Fla. Nat.* 43(4): 148-149, illus. Oct. 1970. *WR 140: 191*
[Indian River Audubon Soc., Brevard Co., Fla.] Two artificial nests were built for great horned owls that were competing with eagles for nest sites.

Erkert, Hans Gerhard. DIE BEDEUTUNG DES LICHTSINNES FUER AKTIVITAET UND RAUMORIENTIERUNG DER SCHLEIEREULE *(TYTO ALBA GUTTATA* BREHM). [THE IMPORTANCE OF THE VISUAL SYSTEM OF THE BARN OWL *(TYTO ALBA GUTTATA* BREHM) IN RELATION TO ACTIVITY AND ORIENTATION.] *Z. Vergl. Physiol.* 64(1): 37-70, illus. 1969. [From Biol. Abstr. 51(22), 1970. In German with English summ.] *WR 140: 191*
[Univ. Tübingen, Tübingen, Germany.]

Fawks, Elton. ONE-DAY EAGLE COUNT FEBRUARY 21 OR 22, 1970. *Audubon Bull.* 154: 17. June 1970. *WR 140: 191*
A one-day eagle count was made in the basins of the Illinois and Mississippi Rivers. A 3-year comparison, 1968-1970, and age ratios are tabulated and compared.

Fischer, Anna Barbara. LABORUNTERSUCHUNGEN UND FREILANDBEOBACHTUNGEN ZUM SEHVERMOEGEN UND VERHALTEN VON ALTWELTGEIERN. [LABORATORY AND FIELD INVESTIGATIONS OF THE VISUAL ACUITY AND BEHAVIOR OF OLD WORLD VULTURES.] *Zool. Jahrbuecher Abt. Syst. Okol. Geogr. Tiere* 96(2): 81-132, illus. 1969. [From Biol. Abstr. 51(18), 1970. In German with English summ.] *WR 140: 192*
[Univ. Munster, Munster, Germany.]

Formon, Alain. CONTRIBUTION À L'ÉTUDE D'UNE POPULATION DE FAUCONS PERLERINS *FALCO PEREGRINUS* DANS L'EST DE LA FRANCE. [CONTRIBUTION TO THE STUDY OF A PEREGRINE FALCON *FALCO PEREGRINUS* POPULATION IN EASTERN FRANCE.] *Nos Oiseaux* 30(326): 109-138, illus. 1969. [From Biol. Abstr. 51(22), 1970. In French with English summ.] *WR 140: 192*
[Cebt. Études Ornithol., Bourgogne, France.]

Forsman, Eric, and Chris Maser. SAW-WHET OWL PREYS ON RED TREE MICE. *Murrelet* 51(1): 10. Jan.-Apr. 1970. *WR 140: 192*
[485 Fir Acres, Eugene, Oreg.] Based on analysis of 36 saw-whet owl pellets, it was concluded that *Aegolius acadicus* was a predator of the red tree mouse.

Gatehouse, S. N., and B. J. Markham. RESPIRATORY METABOLISM OF THREE SPECIES OF RAPTORS. *Auk* 87(4): 738-741, 2 figs. Oct. 1970. *WR 140: 192*
[Univ. Guelph, Guelph, Ontario, Canada.] Peak consumption of O_2 by owls occurred near nightfall, and a lesser peak occurred just before daybreak. Peak consumption for hawks occurred between 7:00 and 8:00 a.m. Sparrow hawks *(Falco sparverius)* had average respiratory quotients of 0.76 in the daytime and 0.74 at night. Respiratory quotients for screech owls *(Asio otus)* were 0.76 in the daytime and 0.83 at night.--Courtesy/ Paul A. Stewart.

Gessamon, James Allen. METABOLISM AND THE THERMOREGULATION OF THE SNOWY OWL, *NYCTEA SCANDICA*. *Ph.D. thesis, Univ. Ill.* 102 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 192*

Hagen, Av Yngvar. NOEN IAKTTAGELSER OVER SLAGUGLA *(STRIX URALENSIS* PALL.) I OSTERDALEN. [URAL OWL *(STRIX URALENSIS* PALL.) RECORDS IN OSTERDALEN, NORWAY.] *Sterna* 8(4): 161-182, illus. 1968. [From Biol. Abstr. 51(23), 1970. In Norwegian with English summ.] *WR 140: 192*

Hagn-Meincke, Thorkild. EN NATUGLEFAMILIES *(STRIX ALUCO* L.) FODE. [FOOD FOR A FAMILY OF TAWNY OWLS *(STRIX ALUCO* L.). *Flora & Fauna* 73(1): 11-20, illus. 1967. [From Biol. Abstr. 51(24), 1970. In Danish.] *WR 140: 192*
[Nordre Ringgade 94, Arhus, Denmark.]

Hamerstrom, Frances. AERIAL TRANSFER OF *CIRCUS CYANEUS*. *Bird-Banding* 41(3): 241. July 1970. *WR 140: 192*
[Rt. 1, Plainfield, Wis.] Food passing at lower altitudes and more talon-to-talon transfers are attributed to high pesticide residues.--Courtesy/ Paul A. Stewart.

Hantge, Eberhard. ZUM BEUTEERWERB UNSERER WANDERFALKEN *(FALCO PEREGRINUS)*. [ON THE PROBLEM OF OUR PEREGRINE FALCON *(FALCO PEREGRINUS)* FINDING ITS PREY.] *Ornithol. Mitteil.* 20(10): 211-217. 1968. [From Biol. Abstr. 51(19), 1970. In German.] *WR 140: 192*
[Adam Stegerwaldstr. 6, Mainz, Germany.]

Haverschmidt, F. NOTES ON THE SNAIL KITE IN SURINAM. *Auk* 87(3): 580-584, 1 fig. July 1970. *WR 140: 192*
[Wolfskuilstraat 16, Ommen, Holland.] Notes on the nesting, copulation, incubation, display flight, plumage, feeding and eggs of the snail kite *(Rostrhamus sociabilis)*.--Courtesy/ Paul A. Stewart.

XUM

Herren, H. ZUR SITUATION DES WANDERFALKES *FALCO PEREGRINUS* IN DER SCHWEIZ (1951 BIS 1965) UND IN ANDERN LÄNDERN. [ON THE STATUS OF PEREGRINE FALCONS *(FALCO PEREGRINUS)* IN SWITZERLAND (1951-1965) AND IN OTHER COUNTRIES.] *Orn. Beob.* 64: 1-5. 1967. [From Ibis 112(1), 1970. In German.] *WR 140: 193*

Hölzinger, J., D. Rockenbauch, and K. Schilhansl. ZUR ÜBERWINTERUNG DES ROTMILANS *(MILVUS MILVUS)* IN SÜDDEUTSCHLAND. [ON THE WINTER FLOCKING OF THE RED KITE *(MILVUS MILVUS)* IN SOUTHERN GERMANY.] *Anz. Ornithol. Ges. Bayern* 8: 383-392. 1968. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 193*

Hölzinger, J., and K. Schilhansl. ZUM VORKOMMEN UND ZUR BRUTBIOLOGIE DER SUMPFOHREULE *(ASIO FLAMMEUS)* IM ULMER RAUM. [ON THE OCCURRENCE AND BREEDING BIOLOGY OF THE SHORT-EARED OWL *(ASIO FLAMMEUS)* IN THE ULM AREA.] *Anz. Ornithol. Ges. Bayern* 8: 277-285. 1968. [From Ibis 112(4), 1970. In German.] *WR 140: 193*

Hoppe, R. ETHOLOGISCHE NOTIZEN ÜBER DEN ROTSCHENKEL-ZWERGFALKEN. [ETHOLOGICAL NOTES ON THE RED-THIGHED FALCONET.] *Falke* 16: 98-101. 1969. [From Ibis 112(4), 1970. In German.] *WR 140: 193*
"Microhierax caerulescens."

Hurley, George. FALL HAWK MIGRATION ALONG PETERS MOUNTAIN IN MONROE COUNTY, WEST VIRGINIA. *Redstart* 37(3): 82-86, 1 fig. July 1970. *WR 140: 193*
[920 Hughes Dr., St. Albans, W. Va.] Results of yearly hawk counts are tabulated for the years 1952-69.

Keicher, K. BEOBACHTUNGEN AN SCHLAFPLÄTZEN DES WANDERFALKEN *(FALCO PEREGRINUS)* AUF DER SCHWÄBISCHEN ALB. [OBSERVATIONS OF ROOSTS OF *FALCO PEREGRINUS* IN THE SWABIAN ALPS.] *Anz. Ornithol. Ges. Bayern* 8: 545-555. 1969. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 193*

Kemper, J. Bryan, and Don S. Eastman. OSPREY NESTING SURVEY IN BRITISH COLUMBIA, CANADA. *Auk* 87(4): 814. Oct. 1970. *WR 140: 193*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] An aerial survey covering 200 miles revealed 19 active osprey *(Pandion haliaetus)* nests which produced 21 young.--Courtesy/ Paul A. Stewart.

Koeman, J. H., J. A. J. Vink, and J. J. M. Goeij. CAUSES OF MORTALITY IN BIRDS OF PREY AND OWLS IN THE NETHERLANDS IN THE WINTER OF 1968/69. *Ardea* 57: 67-76. 1969. [From Ibis 112(3), 1970. In English with Dutch summ.] *WR 140: 193*
[Univ. Utrecht, Utrecht, Netherlands.] "Organo-chlorine and organomercury pesticide residues are documented in dead raptors. These pesticides are used as seed-dressings, and the period of heavy raptor mortality coincided with extensive spraying operations with methyl mercury compounds."

Krägenow, Peter, and Rainer Schwarz. ERGEBNISSE EINER SIEDLUNGSDICHTE-UNTERSUCHUNG AN GREIFVÖGELN IM KREIS RÖBEL 1969. [RESULTS OF COLONY-DENSITY SURVEY OF PREDATORY BIRDS OF THE ROBEL DISTRICT 1969.] *Ornithol. Rundbrief Mecklenburgs* 10: 41-47. 1970. In German. *WR 140: 193*

Kuhk, Rudolf. SCHLUEPFEN UND ENTWICKLUNG DER NESTJUNGEN BEIM RAUHFUSSKAUZ *(AEGOLIUS FUNEREUS)*. [HATCHING AND DEVELOPMENT OF YOUNG *AEGOLIUS FUNEREUS* OWLS.] *Bonner Zool. Beitr.* 20(1-3): 145-150. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 193*

Lambert, Kurt. ZUM VORKOMMEN VON RAUHFUSSBUSSARD *(BUTEO LAGOPUS)* UND MERLIN *(FALCO COLUMBARIUS)* IN MECKLENBURG. [ON THE OCCURRENCE OF ROUGH-LEGGED HAWK *(BUTEO LAGOPUS)* AND MERLIN *(FALCO COLUMBARIUS)* IN MECKLENBURG.] *Ornithol. Rundbrief Mecklenburgs* 10: 48-49. 1970. In German. *WR 140: 193*

Le Duc, Paul. THE NESTING ECOLOGY OF SOME HAWKS AND OWLS IN SOUTHEASTERN MINNESOTA. *Loon* 42(2): 48-62, 9 figs. June 1970. *WR 140: 194*
[St. Mary's Coll., Winona, Minn.] Hawks and owls require a minimal territory from which other birds of the same species are excluded, although individual pairs of hawks and owls tend to share the same or greatly overlapping home ranges. Hawks show a tendency to nest in a specific habitat; owls do not show any particular preference for nesting sites.--From concl.

Le Duc, Paul V. RED-TAILED HAWK ATTACKS BALD EAGLE. *Auk* 87(3): 586. July 1970. *WR 140: 194*
[St. Mary's Coll., Winona, Minn.] *"Buteo jamaicensis* and *Haliaeetus leucocephalus."*--Courtesy/ Paul A. Stewart.

Lincer, Jeffrey L. CHLORINATED HYDROCARBON INSECTICIDE RESIDUES IN ALASKAN PEREGRINE FALCONS, *FALCO PEREGRINUS* TUNSTALL, ROUGHLEGGED HAWKS, *BUTEO LAGOPUS* (PONTOPPIDAN), AND THEIR RESPECTIVE PREY SPECIES. *M.S. thesis, Syracuse Univ.* 1969. Listed in: (Osborn, Katherine H., compiler. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1968-JUNE 1969 INCLUDING ADDITIONS FOR PREVIOUS YEARS. *Forest Sci.* 16(3): 368-384. 1970.) *WR 140: 194*

Mallette, Robert D., Fred C. Sibley, W. Dean Carrier, and John C. Borneman. CALIFORNIA CONDOR SURVEYS, 1969. *Calif. Fish & Game* 56(3): 199-202, 1 fig. July 1970. *WR 140: 194*
[Calif. Dept. Fish & Game, Sacramento.] Two hundred twenty-eight sightings were interpreted as a minimum count of 53 individual birds.

Matvejev, S. D. [FLUCTUATIONS IN THE NUMBER OF PREDATORY BIRDS ON CULTIVATED LAND IN SERBIA.] *VII Intern. Congr. Game Biol.* p. 537-543, 1 fig. 1967. In Russian with French summ. *WR 140: 194*
[Inst. Biol. Nauk, Belgrade, Yugoslavia.]

Meyburg, Bernd-Ulrich, and Ján Švehlik. ZUR ÖKOLOGIE UND ERNÄHRUNG DES SCHWARZMILANS *(MILVUS MIGRANS)* IN DER OSTSLOWAKEI. [ON THE ECOLOGY AND FEEDING OF THE BLACK KITE *(MILVUS MIGRANS)* IN EASTERN CZECHOSLOVAKIA.] *Ornithol. Mitteil.* 22(7): 142-143. July 1970. In German. *WR 140: 194*
[Herbertstrasse 14, Berlin, Germany.]

Mikkola, Heimo. LAPINPÖLLÖN, VIIRUPÖLLÖN JA HUUHKAJAN KESÄAIKAISESTA RAVINNOSTA. [ON THE FOOD OF THE GREAT GREY OWL *(STRIX NEBULOSA)*, THE URAL OWL *(STRIX URALENSIS)* AND THE EAGLE OWL *(BUBO BUBO)* IN FINLAND DURING SUMMER.] *Suomen Riista* 22: 97-104, 4 figs. 1970. In Finnish with English summ. *WR 140: 194*

Mikkola, Heimo, and Seppo Sulkava. FOOD OF GREAT GREY OWLS IN FENNO-SCANDIA. *British Birds* 63(1): 23-27, 1 fig. + 1 pl. 1970. *WR 140: 194*
Of the 4,026 prey animals identified in 870 pellets of *Strix nebulosa*, 94% were voles (66.7% were *Microtus agrestis)*, 4.3% were shrews (6 spp.), and the remaining 1.7% included 12 other mammals (5 spp.), 13 frogs, and 44 birds.

Mondzelewski, Bronislaw. ZASTOSOWANIE SZTUCZNYCH DZIUPLI DLA GNIEZDZENIA SIE PUSZCZYKOW, *STRIX ALUCO* L. [APPLICATION OF ARTIFICIAL HOLES FOR NESTING OF TAWNY OWL *(STRIX ALUCO* L.*).*] *Notatki Ornitol.* 9(4): 78-80, illus. 1968. [From Biol. Abstr. 51(19), 1970. In Polish with English summ.] *WR 140: 194*

Mosansky, Aristid, and Stefan Danko. VERBREITUNG UND BIONOMIE DER ZWERGADLERS *HIERAAETUS PENNATUS* GM., IN DEN WESTKARPATEN (SLOWAKEI). [DISTRIBUTION AND ECOLOGY OF THE BOOTED EAGLE, *HIERAAETUS PENNATUS* GM., IN THE WESTERN CARPATHIANS (SLOVAKIA).] *Zool. Listy* 18(4): 369-380, illus. 1969. [From Biol. Abstr. 51(16), 1970. In German with English summ.] *WR 140: 194*
[East Slovakian Mus., Kosice, Czechoslovakia.]

XUM

Mueller, Helmut C. COURTSHIP AND COPULATION BY A HAND-REARED BROAD-WINGED HAWK. *Auk* 87(3): 580. July 1970. *WR 140: 195*

[Univ. N. C., Chapel Hill.] The bird landed gingerly with the toes completely flexed ("balled into fists"), resting its weight upon the entire length of the tarsometatarsus.--Courtesy/ Paul A. Stewart.

Mueller, Helmut C., and Daniel D. Berger. PREY PREFERENCES IN THE SHARP-SHINNED HAWK: THE ROLES OF SEX, EXPERIENCE, AND MOTIVATION. *Auk* 87(3): 452-457, 4 figs. July 1970. *WR 140: 195*

[Univ. N. C., Chapel Hill.] Males showed a stronger preference for smaller prey than did females. Adults were less likely to strike inappropriately large prey than juveniles. Hawks lighter in weight and hence presumably hungrier showed greater boldness in attacking prey than did those heavier in weight.--From summ. Courtesy/ Paul A. Stewart.

Mueller, Helmut C. STIMULI ELICITING BATHING BEHAVIOR NN HAND-REARED HAWKS. *Auk* 87(4): 810-811. Oct. 1970. *WR 140: 195*

[Univ. N. C., Chapel Hill.] Four *Falco sparverius* and two *Buteo platypterus* were tested for response to a bright, shiny surface (Saran Wrap). Two sparrow hawks and one broad-winged hawk responded with prolonged bathing and subsequent preening behavior, including bill-wiping, without having had previous experience with water.--Courtesy/ Paul A. Stewart.

Mysterud, Ivar, and Yngvar Hagen. THE FOOD OF THE URAL OWL *(STRIX URALENSIS* PALL.*)* IN NORWAY. *Nytt Mag. Zool.* (Oslo) 17(2): 166-167. 1969. [From J. Mammal. 51(4) suppl. 1970.] *WR 140: 195*

Nader, Iyad A. ANIMAL REMAINS IN PELLETS OF THE BARN OWL *TYTO ALBA* FROM THE VICINITY OF AN-NAJAF, IRAQ. *Bull. Iraq. Nat. Hist. Mus.* 4(1): 1-7, illus. 1968. [From Biol. Abstr. 51(15), 1970. In English with Arabic summ.] *WR 140: 195*

[Biol. Res. Cent., Counc. Sci. Res., Baghdad, Iraq.]

Nero, Robert W. GREAT GRAY OWLS NESTING NEAR ROSEAU. *Loon* 42(3): 88-93, illus. Sept. 1970. *WR 140: 195*

[546 Coventry Road, Winnipeg, Manitoba, Canada.] Observations of a nesting pair. Three young fledged.

Ogden, John C. FLORIDA BAY OSPREY POPULATION STUDY. *Fla. Nat.* 43(3): 113-114. July 1970. *WR 140: 195*

[Everglades Natl. Park, Fla.] Egg laying and nest success were recorded for 46 occupied nests in Florida Bay. Losses from nests, post breeding dispersal, and food items are described.

Parmalee, Paul W. CALIFORNIA CONDOR AND OTHER BIRDS FROM STANTON CAVE, ARIZONA. *J. Ariz. Acad. Sci.* 5(4): 204-206, illus. 1969. [From Biol. Abstr. 51(15), 1970.] *WR 140: 195*

Piechocki, R. ÜBER DAS GEWICHT UND DIE GROSSGEFIEDER-MAUSER DER ZWERGOHREULE. *(OTUS SCOPS).* [ON THE WEIGHT AND THE MOLTING OF THE LARGE FEATHERS OF THE SCOPS OWL. *(OTUS SCOPS).*] *Bonner Zool. Beitr.* 20(1-3): 42-47. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 195*

[Martin-Luther Univ., Halle/Waittenberg, Germany.]

Porter, Richard D., and Stanley N. Wiemeyer. PROPAGATION OF CAPTIVE AMERICAN KESTRELS. *J. Wildl. Mgmt.* 34(3): 594-604, 1 fig. July 1970. *WR 140: 195*

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: A colony of kestrels *(Falco sparverius)* was established at the Patuxent Wildlife Research Center in 1964 in connection with work on pesticides. The kestrels were acquired from the wild, both as nestlings and as full-grown birds, and were housed in several rows of outdoor pens. Each 50 x 20 ft pen was covered with wire netting and had its

long sides in common with adjacent pens. During the first two reproductive seasons, untreated parent birds (dosed birds are not included in this paper) ate eggs and young. Cannibalism virtually ceased after the diet was changed from ground beef or horsemeat supplemented with liver, vitamins, and minerals to one containing a finely ground mixture of laboratory rodents, chicken heads, skinned chicken necks, and supplements; hatching success thereafter generally equalled that of a wild population. In 1967, 16 pairs of untreated hawks (3-year-old females) laid clutches averaging 4.9 eggs, hatched 88% of their eggs, and fledged 88% of their young. In 1968, 10 pairs of this group (4-year-old females) laid clutches averaging 4.9 eggs, hatched 51% of their eggs, and fledged 85% of their young. Nine yearling pairs (hatched in captivity) laid clutches in 1968 averaging 5.1 eggs, hatched 87% of their eggs, and fledged all of their young.

Reese, J. A MARYLAND OSPREY POPULATION 75 YEARS AGO AND TODAY. *Md. Birdlife* 25: 116-119. 1969. [From Auk 87(4), 1970.] *WR 140: 196*

Reese, Jan G. REPRODUCTION IN A CHESAPEAKE BAY OSPREY POPULATION. *Auk* 87(4): 747-759, 2 figs. Oct. 1970. *WR 140: 196*
[St. Michael's, Md.] Ospreys *(Pandion haliaetus)* are still reproducing in the Chesapeake Bay area at a level near that prevailing before 1960 and well above that of most other well-documented United States populations.--Courtesy/ Paul A. Stewart.

Retfalvi, Laszlo. FOOD OF NESTING BALD EAGLES ON SAN JUAN ISLAND, WASHINGTON. *Condor* 72(3): 358-361, 1 fig. July 1970. *WR 140: 196*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Total diet determined by direct observation differed from diet calculated by means of debris analysis.--Courtesy/ Paul A. Stewart.

Reynolds, Richard T. NEST OBSERVATIONS OF THE LONG-EARED OWL *(ASIO OTUS)* IN BENTON COUNTY, OREGON, WITH NOTES ON THEIR FOOD HABITS. *Murrelet* 51(1): 8-9. Jan.-Apr. 1970. *WR 140: 196*
[1745 N.W. 9th St., Corvallis, Oreg.] Food habits, habitat, and nesting data was reported for a pair of long-eared owls in Corvallis, Oregon.

Richards, Gerald L. AMERICAN KESTREL, *FALCO SPARVERIUS*, EXHIBITS RELIC NEST BUILDING BEHAVIOR. *Condor* 72(4): 476. Oct. 1970. *WR 140: 196*
[Wis. State Univ., Whitewater.] Courtesy/ Paul A. Stewart.

Rockenbauch, D. ZUR BRUTBIOLOGIE DES TURMFALKEN *(FALCO TINNUNCULUS* L.*)*. [THE BREEDING BIOLOGY OF THE KESTREL *(FALCO TINNUNCULUS).*] *Anz. Ornithol. Ges. Bayern* 8: 267-276. 1968. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 196*

Rogge, Günther. VORLÄUFIGE ERGEBNISSE DER BESTANDSAUFNAHME DES TURMFALKEN *(FALCO TINNUNCULUS)* IN DEN BEZIRKEN ROSTOCK, SCHWERIN UND NEUBRANDENBURG. [PRELIMINARY RESULTS UPON THE INVENTORY OF KESTRELS *(FALCO TINNUNCULUS)* IN THE REGIONS OF ROSTOCK, SCHWERIN, AND NEUBRANDENBURG.] *Ornithol. Rundbrief Mecklenburge* 10: 28-34. 1970. In German. *WR 140: 196*

Ross, P. Vaughn. NOTES ON THE ECOLOGY OF THE BURROWING OWL, *SPEOTYTO CUNICULARIA*, IN THE TEXAS HIGH PLAINS. *Texas J. Sci.* 21(4): 479-480. 12 June 1970. [From J. Mammal. 51(4) suppl. 1970.] *WR 140: 196*

Schifferli, Alfred. VOM ZUG SCHWEIZERISCHER UND DEUTSCHER SCHWARZER MILANE *MILVUS MIGRANS* NACH RINGFUNDEN. [ON THE MIGRATION OF SWISS AND GERMAN BLACK KITES *(MILVUS MIGRANS)* ACCORDING TO FINDINGS OF RINGS.] *Ornithol. Beob.* 64 (2/3): 34-51, illus. 1967. [From Biol. Abstr. 51(18), 1970. In German with English summ.] *WR 140: 196*
[Vogelwarte, Sempach, Switzerland.]

Schonhardt, Hans. ZUR VOGELWELT DES SCHWARZWALDES. 4. FORTSETZUNG: RAUHFUSSKAUZ *(AEGOLIUS FUNEREUS)*. [ON THE AVIFAUNA OF THE BLACK FOREST. 4th PART: TENGMALM'S OWL *(AEGOLIUS FUNEREUS)*.] *Ornithol. Mitteil.* 22(9): 184-188. Sept. 1970. In German. *WR 140: 197*
[Kriegsstrasse 296, Karlsruhe, Germany.]

Schröder, H. ERGEBNISSE VON UMFRAGEN NACH BAUMFALKENVORKOMMEN IN MECKLENBURG (BEZIRKE ROSTOCK, SCHWERIN, NEUBRANDENBURG) 1967-1969. [RESULTS UPON INQUIRIES INTO THE STATUS OF HOBBY *(FALCO SUBBUTEO)* IN MECKLENBURG (ROSTOCK, SCHWERIN, AND NEUBRANDENBURG REGIONS) 1967-1969.] *Ornithol. Rundbrief Mecklenburge* 10: 3-13. 1970. In German. *WR 140: 197*
[Müritz Museum, Waren, Germany.]

Schröder, Horst. ZUR ENTWICKLUNG DES WANDERFALKENBESTANDES IN MECKLENBURG (BEZIRKE ROSTOCK, SCHWERIN, NEUBRANDENBURG) VON 1960 BIS 1969. [ON THE DEVELOPMENT OF THE PEREGRINE *(FALCO PEREGRINUS)* POPULATION IN MECKLENBURG (ROSTOCK, SCHWERIN, AND NEUBRANDENBURG REGIONS) FROM 1960 TO 1969.] *Ornithol. Rundbrief Mecklenburge* 10: 14-27, 1 fig. 1970. In German. *WR 140: 197*
[Müritz Museum, Waren, Germany.]

Scott, Lorne. GREAT HORNED OWLS OCCUPY ARTIFICIAL NESTING SITE. *Blue Jay* 28(3): 123. Sept. 1970. *WR 140: 197*
[Indian Head, Saskatchewan, Canada.] Three young were raised in the platform nest.

Shrubb, M. THE PRESENT STATUS OF THE KESTREL IN SUSSEX. *Bird Study* 17(1): 1-15. 1970. [From Biol. Abstr. 51(21), 1970.] *WR 140: 197*
[Fairfields, Chichester, Sussex, England.] *"Falco tinnunculus."*

Smeenk, C. LEGSELGROOTTE BIJ DE BOSUIL *(STRIX ALUCO* L.*)*. [BROOD SIZE IN THE TAWNY OWL *(STRIX ALUCO* L.*)*.] *Limosa* 42(1/2): 79-81. 1969. [From Biol. Abstr. 51(17), 1970. In Dutch with German summ.] *WR 140: 197*
[Rijksmus. Natuur. Hist., Leiden, Netherlands.]

Smith, Dwight G. NESTING ECOLOGY OF THE GREAT HORNED OWL *BUBO VIRGINIANUS*. *Brigham Young Univ. Sci. Bull. Biol. Ser.* 10(4): 16-25. Oct. 1969. [From J. Mammal. 51(4) suppl. 1970.] *WR 140: 197*
[Brigham Young Univ., Provo, Utah.]

Smith, Dwight G., Charles R. Wilson, and Herbert H. Frost. FALL NESTING BARN OWLS IN UTAH. *Condor* 72(4): 492. Oct. 1970. *WR 140: 197*
[Brigham Young Univ., Provo, Utah.] Two barn owl nests were active in October.--Courtesy/ Paul A. Stewart.

Snyder, Noel F. R., and Helen A. Snyder. FEEDING TERRITORIES IN THE EVERGLADE KITE. *Condor* 72(4): 492-493, 1 fig. Oct. 1970. *WR 140: 197*
[Univ. S. Fla., Tampa.] Four feeding territories were defended along a canal in which *Pomacea* (fresh water snails) were extremely abundant.--Courtesy/ Paul A. Stewart.

Sparrowe, Rollin DeMers. PREY-CATCHING BEHAVIOR IN THE AMERICAN KESTREL *(FALCO SPARVERIUS)*. *Ph.D. thesis, Mich. State Univ.* 55 p. 1969. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 197*

Stewart, Paul A. WEIGHT CHANGES AND FEEDING BEHAVIOR OF A CAPTIVE-REARED BALD EAGLE. *Bird-Banding* 41(2): 103-110, 2 figs. Apr. 1970. *WR 140: 197*
[USDA, Entomol. Res. Div., Oxford, N.C.] Includes information on growth rate, weight maintenance under food deprivation, amount of food used, selection of food, preparation of food for eating, and pellet formation by a bald eagle *(Haliaetus leucocephalus)*.

Stone, Ward B., and David E. Janes. TRICHOMONIASIS IN CAPTIVE SPARROW HAWKS. *Bull. Wildl. Disease Assoc.* 5(3): 147. July 1969. *WR 140: 198*
[Syracuse Univ., Syracuse, N.Y.] The female was believed to have been infected naturally, while the male had ample opportunity to become infected in the common cage environment.

Stübs, Jürgen. SELTENE GREIFVOGELARTEN IN MECKLENBURG. [RARE PREDATORY BIRDS OF MECKLENBURG.] *Ornithol. Rundbrief Mecklenburgs* 10: 50-55. 1970. In German. *WR 140: 198*
Annotated list of 14 spp.

Thiollay, J. M. LE RÉGIME ALIMENTAIRE DE NOS RAPACES: QUELQUES ANALYSES FRANCAISES. [THE DIET OF RAPTORS: SOME FRENCH ANALYSES.] *Nos Oiseaux Bull. Soc. Romande Étude Protect Oiseaux* 29(319): 249-268, illus. 1968. [From Biol. Abstr. 51(18), 1970. In French.] *WR 140: 198*
[19 Jean-Mermoz, Viroflay, France.]

Thiollay, J. M. NOTES SUR LES RAPACES DIURNES DE CORSE. [NOTES ON THE DIURNAL RAPTORS OF CORSICA.] *Oiseau* 38: 187-208. 1968. [From Ibis 112(3), 1970. In French.] *WR 140: 198*
[19 Jean-Mermoz, Viroflay, France.]

Thiollay, J. M. ESSAI SUR LES RAPACES DU MIDI DE LA FRANCE. DISTRIBUTION. ECOLOGIE. [WORK ON BIRDS OF PREY IN THE SOUTH OF FRANCE. DISTRIBUTION. ECOLOGY.] *Alauda* 37(1): 15-27. 1969. [From Biol. Abstr. 51(16), 1970. In French.] *WR 140: 198*
[19 Jean-Mermoz, Viroflay, France.] *"Bubo bubo bubo."*

Trillmich, F. ZUR SIEDLUNGSDICHTE VON ROTMILAN *(MILVUS MILVUS)* UND MÄUSEBUSSARD *(BUTEO BUTEO)* BEI HILDESHEIM. [THE POPULATION DENSITY OF THE KITE *(MILVUS MILVUS)* AND THE BUZZARD *(BUTEO BUTEO)* AT HILDESHEIM.] *Vogelwelt* 90: 98-108. 1969. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 198*

Ulfstrand, Staffan, and Henrik Johansson. GLADANS *MILVUS MILVUS* ÖVERVINTRING I SKÅNE. [THE WINTERING OF KITES IN SCANIA, SWEDEN.] *Vår Fågelvärld* 28: 107-115. 1969. [From Bird-Banding 41(2), 1970. In Swedish with English summ.] *WR 140: 198*

Van Der Kraan, C., and N. J. Van Strien. POLYGAMIE BIJ DE BLAUWE KIEKENDIEF *(CIRCUS CYANEUS)*. [POLYGAMY IN HEN HARRIER *(CIRCUS CYANEUS)*.] *Limosa* 42(1/2): 34-35. 1969. [From Biol. Abstr. 51(15), 1970. In Dutch with English summ.] *WR 140: 198*

Voous, K. H. PREDATION POTENTIAL IN BIRDS OF PREY FROM SURINAM. *Ardea* 57: 117-148. 1969. [From Ibis 112(4), 1970.] *WR 140: 198*

Waian, Lee B., and Rey C. Stendall. THE WHITE-TAILED KITE IN CALIFORNIA WITH OBSERVATIONS OF THE SANTA BARBARA POPULATION. *Calif. Fish & Game* 56(3): 188-198, 4 figs. July 1970. *WR 140: 198*
[Calif. State Coll., Fullerton.] Historical evidence suggests the white-tailed kite *(Elanus leucurus majusculus)* in the last 30 years has made a remarkable recovery from near extinction in California. A population of white-tailed kites in the Goleta Valley north of Santa Barbara was studied during the period beginning September 1965 through June 1968. This population exhibited marked seasonal fluctuations as determined by systematic observations of communal night roosting and occurrence in suitable habitat. Evidence from food habit studies suggests that kites, at least in this area, are an almost obligate predator on small mammals, most of which are diurnally active. The authors believe that several behavioral attributes exhibited by the species adapt it for exploitation of prey species with fluctuating population densities.--From abstr.

Ward, F. Prescott, David G. Fairchild, and Jeanne V. Vuicich. PULMONARY ASPERGILLOSIS IN PRAIRIE FALCON NEST MATES. *J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(1): 80-83, 2 figs. Jan. 1970. *WR 140: 199*
[Med. Res. Lab., Edgewood Arsenal, Md.]

Weston, John Bradford. NESTING ECOLOGY OF THE FERRUGINOUS HAWK *BUTEO REGALIS*. *Brigham Young Univ. Sci. Bull. Biol. Ser.* 10(4): 25-36. Oct. 1969. [From J. Mammal. 51(4) suppl. 1970.] *WR 140: 199*

White, Clayton M. BIOSYSTEMATICS OF THE NORTH AMERICAN PEREGRINE FALCONS. *Ph.D. thesis, Univ. Utah.* 211 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 199*

Wiemeyer, Stanley N., and Richard D. Porter. DDE THINS EGGSHELLS OF CAPTIVE AMERICAN KESTRELS. *Nature* 227(5259): 737-738. 15 Aug. 1970. *WR 140: 199*
[Patuxent Wildl. Res. Center, Laurel, Md.] "DDE-induced thinning of kestrel eggshells in a controlled experiment further strengthens the hypothesis that this chemical is an important factor in eggshell thinning in wild raptorial and fish-eating birds."

Wille, Hans-Günter. VERGLEICHENDE STUDIEN ZUM FEINDVERHALTEN GEGENÜBER DEM MENSCHEN BEIM WALDKAUZ *(STRIX ALUCO)* UND BEI DER WALDOHREULE *(ASIO OTUS)*. [COMPARATIVE STUDIES OF HOSTILE BEHAVIOR BETWEEN MALES OF THE TAWNY OWL *(STRIX ALUCO)* AND THE LONG-EARED OWL *(ASIO OTUS)*.] *Ornithol. Mitteil.* 22(7): 150-152. July 1970. In German. *WR 140: 199*
[Petersallee 4, Berlin, Germany.]

BLACKBIRDS, STARLINGS, CROWS

Bährmann, Udo. DIE "GESICHTSMAUSER" DER SAATKRÄHE *(CORVUS FRUGILEGUS FRUGILEGUS* L.*)*. [THE FACIAL MOLT OF THE ROOK *(CORVUS FRUGILEGUS FRUGILEGUS* L.*)*.] *Zool. Abh. Staatl. Mus. Tierk. Dresden* 28: 221-234, illus. 1965/1966. [From Biol. Abstr. 51(19), 1970. In German.] *WR 140: 199*

Benson, W. W., and Joe Gabica. INSECTICIDE RESIDUES IN STARLINGS IN IDAHO. *Bull. Environmental Contamination & Toxicol.* 5(3): 243-246. May-June 1970. *WR 140: 199*
[Idaho Community Studies on Pesticides, Boise.] *"Sturnus vulgaris."*

Berthold, P. ABENDLICHER SCHLAFPLATZWECHSEL BEI FINNISCHEN STAREN. *(STURNUS VULGARIS)*. [THE EVENING CHANGE OF THE ROOSTING SITE OF THE SOUTH FINNISH STARLING *(STURNUS VULGARIS)*.] *Bonner Zool. Beitr.* 20(1-3): 207-210. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 199*
[Max-Planck-Inst., Verhaltensphysiol., Schloss Moggingen, Germany.]

Bianchi, V. [RING DATA FOR THE STARLING IN THE N. W. REGIONS OF THE RUSSIAN SFSR.] *Communications of the Baltic Commission for the Study of Bird Migration* 5: 110-121. 1968. [From Ibis 112(2), 1970. In Russian with English summ.] *WR 140: 199*

Brown, Jerram L. COOPERATIVE BREEDING AND ALTRUISTIC BEHAVIOUR IN THE MEXICAN JAY, *APHELOCOMA ULTRAMARINA*. *Animal Behaviour* 18(2): 366-378, 3 figs. May 1970. *WR 140: 199*
[Univ. Rochester, Rochester, N.Y.]

Burtt, Harold E., and Maurice L. Giltz. THE SEX-RATIO FOR THE RED-WINGED BLACKBIRD. *Inland Bird Banding News* 42(3): 83-85, 1 fig. May-June 1970. *WR 140: 199*
[Ohio State Univ., Columbus.] In a sample of 68,248 red-wings captured in decoy traps, 75% were male. Seasonal variations occurred, some of which may reflect a sampling error. The small percentage of males recorded from the

population in April-May could reflect the tendency of females to join feeding and roosting flocks, and to approach feeding or singing males during this season, thus making them more susceptible to capture in decoy traps where males are present.--Courtesy/ Paul A. Stewart.

Busse, P. RESULTS OF RINGING OF EUROPEAN CORVIDAE. *Acta Ornithol.* 15: 263-328. 1969. [From Ibis 112(4), 1970.] *WR 140: 200*

Codourey, J. SUR LA NIDIFICATION DU CHOCARD À BEC JAUNE DANS LES PRÉALPES FRIBOURGEOISES. [CONCERNING NIDIFICATION OF THE ALPINE CHOUGH *PYRRHOCORAX GRACULUS* IN THE FORE-ALPS OF FRIBOURG.] *Nos Oiseaux* 29(321): 338-341, illus. 1968. [From Biol. Abstr. 51(24), 1970. In French.] *WR 140: 200*
[Mus. Hist. Nat., Perolles-Fribourg, Switzerland.]

Davis, G. James, and John F. Lussenhop. ROOSTING OF STARLINGS *(STURNUS VULGARIS)*: A FUNCTION OF LIGHT AND TIME. *Animal Behaviour* 18(2): 362-365, 2 figs. May 1970. *WR 140: 200*
[Univ. Wis., Madison.] Summary: Starlings *(Sturnus vulgaris)* were observed returning to roost from 27 August to 7 October, 1966. Initial departure towards the roost was closely correlated with light intensity. The time of departure from the feeding areas would probably show a better correlation with light intensity than would the time of departure for the first and final assemblies. As the roost is approached there is a weaker correlation between light intensity and time of departure from rendezvous areas. Starlings arrival at the roost is not simply a function of the light-time stimulus, because it also depends on the light intensity at the time starlings began flying. The latter influences their rate, the varying distances they must fly to the final roost, and behavioural interactions en route.

Delvingt, W. L'UTILISATION DES NICHOIRS COMME DORTOIRS PAR L'ÉTOURNEAU, *STURNUS VULGARIS* L. [UTILIZATION OF NESTBOXES AS ROOSTS BY THE STARLING, *STURNUS VULGARIS* L.] *Gerfaut* 59: 35-47. 1969. [From Ibis 112(3), 1970. In French with English summ.] *WR 140: 200*

Giltz, Maurice L., and Harold E. Burtt. SOME RESULTS FROM SIX YEARS OF TRAPPING BLACKBIRDS AND STARLINGS IN OHIO. *Trans. NE Sect. Wildl. Soc., 27th NE Fish & Wildl. Conf., 25-28 Jan. 1970.* p. 219-228. 1970. *WR 140: 200*
[Ohio State Univ., Columbus.]

Haigh, Celia Rosalind. SEXUAL DIMORPHISM, SEX RATIOS AND POLYGYNY IN THE RED-WINGED BLACKBIRD. *Ph.D. thesis, Univ. Wash.* 129 p. 1968. [From Dissertation Abstr. Intern. 30(2B), 1969.] *WR 140: 200*

Hammer, Ulrich. ZUM BEUTETRANSPORT BEI RABENVÖGELN. [ON THE TRANSPORT OF BOOTY BY CORVIDAE.] *Ornithol. Mitteil.* 22(8): 165-166. Aug. 1970. In German. *WR 140: 200*
[Kaiserstrasse 10, Heidelberg, Germany.]

Hardy, J. W. HABITS AND HABITATS OF CERTAIN SOUTH AMERICAN JAYS. *Los Angeles County Mus. Contrib. Sci.* no. 165. 16 p. 1969. [From Auk 87(3), 1970.] *WR 140: 200*

Helminen, Matti, and Olavi Stenman. KLORALOOSI VARISLINTUMYRKKYNÄ. [FINNISH EXPERIENCE OF POISONING CROWS WITH CHLORALOSE.] *Suomen Riista* 22: 74-88, 7 figs. 1970. In Finnish with English summ. *WR 140: 200*

Hintz, Jacob V., and M. I. Dyer. DAILY RHYTHM AND SEASONAL CHANGE IN THE SUMMER DIET OF ADULT RED-WINGED BLACKBIRDS. *J. Wildl. Mgmt.* 34(4): 789-799, 9 figs. Oct. 1970. *WR 140: 200*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: The stomach contents of 402 adult male and 248 adult female red-winged blackbirds *(Agelaius phoeniceus)* were analyzed for their total dry weight and caloric values to

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determine daily rhythms and seasonal changes between June 24 and September 10, 1966. The stomach contents were analyzed qualitatively by identifying and estimating the proportion of each food type. The mean caloric value of food in male redwings showed three peaks during the day and was significantly ($P<0.01$) higher before noon than after noon. Mean caloric intake of female redwings showed three peaks during the morning but no major peaks were demonstrated in the afternoon. Intake levels in the females were also higher in the morning. Mean caloric intake in June at the end of the breeding season was 211 cal/[bird gram x day] and in September, prior to autumn migration, was 246 [cal/bird gram x day]. Daily and seasonal peaks of the total energy intake represented changes in quantity of food consumed and changes in caloric content of ingested food.

Holcomb, Larry C., and Gilbert Twiest. GROWTH RATES AND SEX RATIOS OF RED-WINGED BLACKBIRD NESTLINGS. *Wilson Bull.* 82(3): 294-303, 2 figs. Sept. 1970. *WR 140: 201*

[Creighton Univ., Omaha, Nebr.] Body weights of nestling red-winged blackbirds *(Agelaius phoeniceus)* increased more rapidly among males than females, but growth rates were similar between the sexes in wing length, total length and several other similar parameters. Red-winged blackbirds can usually be sexed by weight differences by the eighth day after hatching. Males and females occur in the population in equal numbers during their first summer.--Courtesy/ Paul A. Stewart.

Holyoak, David. THE RELATION OF EGG COLOUR TO LAYING SEQUENCE IN THE CARRION CROW. *Bull. British Ornithologists' Club* 90(2): 40-42. Apr. 1970. *WR 140: 201*

[13 Ellison Rd., London, England.] It was suggested that, with *Corvus corone*, "the last egg is often paler than the others because the female bird becomes short of pigment towards the end of laying. It seems, nevertheless, that she is able to repair the deficiency quickly as a repeat clutch is not much, if at all, paler than the first one. The reduction of pigmentation in the last egg could, however, be taken as an indication that selection for the present egg colour in the Carrion Crow is slight, or that the balance of selective forces that caused the original colour is changing."

Holyoak, D. T. SEX-DIFFERENCES IN FEEDING BEHAVIOUR AND SIZE IN THE CARRION CROW. *Ibis* 112(3): 397-400. July 1970. *WR 140: 201*

[13 Ellison Rd., London, England.] *"Corvus corone."*

Long, J. L. THE INDIAN CROW. *J. Agr. Western Australia* 8: 1-3. 1967. [From Ibis 112(4), 1970.] *WR 140: 201*

Corvus splendens has become established in Australia and is a potential pest species.

Lovitz, Alfred, Jr. NOCTURNAL ROOSTING BEHAVIOR OF SOME MEMBERS OF THE FAMILY ICTERIDAE AND THEIR ALLIES IN DECIDUOUS ROOSTS AS RECORDED BY THE INFRA-RED IMAGING CAMERA. *Ph.D. thesis, Ohio State Univ.* 83 p. 1970. [From Dissertation Abstr. Intern. 31(4B), 1970.] *WR 140: 201*

Lustick, Sheldon. ENERGY REQUIREMENTS OF MOLT IN COWBIRDS. *Auk* 87(4): 742-746, 2 figs. Oct. 1970. *WR 140: 201*

[Ohio State Univ., Columbus.] Oxygen consumption by brown-headed cowbirds *(Molothrus ater)* increased 13% as a result of molting.--Courtesy/ Paul A. Stewart.

Lustick, Sheldon, Sharon Talbot, and Edward L. Fox. ABSORPTION OF RADIANT ENERGY IN REDWINGED BLACKBIRDS *(AGELAIUS PHOENICEUS)*. *Condor* 72(4): 471-473, 1 fig. Oct. 1970. *WR 140: 201*

[Ohio State Univ., Columbus.] Courtesy/ Paul A. Stewart.

Mitchell, W. G., and E. C. Turner. ARTHROPOD PARASITES ON THE STARLING, *STURNUS VULGARIS* L., IN SOUTHWEST VIRGINIA. *J. Econ. Entomol.* 62(1): 195-197. 1969. [From Bird-Banding 41(2), 1970.] *WR 140: 202*

Niles, David M. A RECORD OF CLUTCH SIZE AND BREEDING IN NEW MEXICO FOR THE BRONZED COWBIRD. *Condor* 72(4): 500-501. Oct. 1970. *WR 140: 202*
[Univ. Kans., Lawrence.] Developmental stages of ova indicated a clutch of four eggs for a bronzed cowbird *(Tangavius aeneus).*--Courtesy/ Paul A. Stewart.

Payne, Robert B., and Marsha Landolt. THYROID HISTOLOGY OF TRICOLORED BLACKBIRDS *(AGELAIUS TRICOLOR)* IN THE ANNUAL CYCLE, BREEDING, AND MOLT. *Condor* 72(4): 445-451, 5 figs. Oct. 1970. *WR 140: 202*
[Univ. Mich., Ann Arbor.] "Changes in metabolic rate in the blackbirds are probably in large part mediated through routes other than changing levels of thyroid activity."--Courtesy/ Paul A. Stewart.

Pivar, Gojko. CONTRIBUTION À LA CONNAISSANCE DE L'INFLUENCE BIOLOGIQUE DE LA CORNEILLE GRISE--*CORVUS CORNIX* L.: SUR LES OISEAUX DE MARAIS, DONT CERTAINES ESPÈCES ONT UNE IMPORTANCE CYNEGETIQUE DANS LES RÉGIONS MARÉCAGEUSES DE KOPAČEVO ET DES ENVIRONS DE BARANJA. [CONTRIBUTION TO THE KNOWLEDGE OF THE BIOLOGICAL INFLUENCE OF THE HOODED CROW *(CORVUS CORNIX)* ON CERTAIN SPECIES OF SHOREBIRDS WHICH ARE OF HUNTING IMPORTANCE IN THE MARSHY REGIONS OF KOPAČEVO AND THE VICINITY OF BARANJA.] *VII Intern. Congr. Game Biol.* p. 623-628. 1967. In French with Russian summ. *WR 140: 202*

Power, Dennis M. GEOGRAPHIC VARIATION IN THE SURFACE/VOLUME RATIO OF THE BILL OF RED-WINGED BLACKBIRDS IN RELATION TO CERTAIN GEOGRAPHIC AND CLIMATIC FACTORS. *Condor* 72(3): 299-304, 3 figs. July 1970. *WR 140: 202*
[Univ. Toronto, Toronto, Ontario, Canada.] Courtesy/ Paul A. Stewart.

Roseberry, John L., and W. D. Klimstra. THE NESTING ECOLOGY AND REPRODUCTIVE PERFORMANCE OF THE EASTERN MEADOWLARK. *Wilson Bull.* 82(3): 243-267, 1 fig. Sept. 1970. *WR 140: 202*
[S. Ill. Univ., Carbondale.] All of 450 eastern meadowlark *(Sturnella magna)* nests were on the ground in cover 10-20 inches high. Nests were made of rush, meadow fescue, cheat, and bluegrass. 17.3% were open on top, 44.5% were partly roofed, and 38.2% were fully roofed. Almost 49% of the nests faced in a northeasterly direction. The earliest date of egg laying was 14 April, the latest 23 July, and the peak was from 22 April to 12 May. The density of nests per 100 acres was 20.9 in pastures, 12.6 in hayfields, 5.1 in soilbank fields, 4.8 in wheat fields, 3.8 in idle areas, and 2.0 in fallow fields. There was an average of 4.16 eggs per clutch, with clutch size decreasing as the season advanced. Hatching success was 37.4% and fledging success 30.5%. There was a direct relationship between the amount of overhead concealment of the nests and nesting success, and the percentage of successful nests increased as the season advanced.--Courtesy/ Paul A. Stewart.

Royall, Willis C., Jr. COWBIRDS AT A PHOENIX, ARIZONA, CATTLE FEEDLOT. *Western Bird Bander* 43(3): 41-42. July 1968. *WR 140: 202*
[Wildl. Res. Center, Denver, Colo.] Information on status, habits, and interrelationship of cowbird species wintering in the Phoenix, Arizona, area is given. Band recoveries are also reported.--From abstr.

Schwab, Robert G. LIGHT-INDUCED PROLONGATION OF SPERMATOGENESIS IN THE EUROPEAN STARLING, *STURNUS VULGARIS.* *Condor* 72(4): 466-470, 1 fig. Oct. 1970. *WR 140: 202*
[Univ. Calif., Davis.] Courtesy/ Paul A. Stewart.

BLACKBIRDS, STARLINGS, CROWS--Continued

Swenson, Leland C. ONE VERSUS TWO DISCRIMINATION BY WHITENECKED RAVENS *(CORVUS CRYPTOLEUCUS)* WITH NON-NUMBER DIMENSIONS VARIED. *Animal Behaviour* 18 (3): 454-460, 3 figs. Aug. 1970. *WR 140: 203*
[Occidental Coll., Los Angeles, Calif.] Three ravens were tested on a one versus two number-discrimination task. One bird maintained a 90% accuracy level and showed good transfer to new stimuli. The other two showed lower levels of accuracy and seemed to respond to area cues or position preference.

Verheyen, R. F. DE BALTS EN COPULATIE VAN DE SPREEUW, *STURNUS V. VULGARIS* LINNAEUS. [THE COURTING AND MATING OF THE STARLING *STURNUS V. VULGARIS* LINNAEUS.] *Gerfaut* 58(3/4): 369-393, illus. 1968. [From Biol. Abstr. 51(21), 1970. In Dutch with French and English summ.] *WR 140: 203*
[Roy. Inst. Nat. Hist., Brussels, Belgium.]

Verheyen, R. F. LE CHOIX DU NICHOIR CHEZ L'ETOURNEAU, *STURNUS V. VULGARIS* L. [SELECTION OF NEST-BOXES BY THE STARLING, *STURNUS V. VULGARIS* L.] *Gerfaut* 59: 239-259. 1969. [From Ibis 112(3), 1970. In French with English summ.] *WR 140: 203*
[Roy. Inst. Nat. Hist., Brussels, Belgium.]

Verheyen, R. F. ARRIVAL AT THE BREEDING AREA, MATURITY FOR BREEDING AND ONSET OF LAYING ACCORDING TO AGE IN THE STARLING POPULATION *(STURNUS V. VULGARIS L.)* OF LOWER AND MIDDLE BELGIUM. *Gerfaut* 59(3/4): 378-384, illus. 1969. [From Biol. Abstr. 51(19), 1970. In English with French and Dutch summ.] *WR 140: 203*
[Roy. Inst. Nat. Hist., Brussels, Belgium.]

Wittenberg, J. FREILANDUNTERSUCHUNGEN ZU BRUTBIOLOGIE UND VERHALTEN DER RABENKRAHE *(CORVUS C. CORONE)*. [FIELD OBSERVATIONS ON THE BREEDING BIOLOGY AND BEHAVIOR OF THE CARRION CROW *(CORVUS C. CORONE).*] *Zool. Jb. Syst.* 95: 16-146. 1968. [From Ibis 112(4), 1970. In German.] *WR 140: 203*
"With an extensive bibliography of crow literature."

Worth, C. Brooke. ASPIRATION OF SEEDS BY TRAPPED RED-WINGED BLACKBIRDS. *Bird-Banding* 41(3): 243-244. July 1970. *WR 140: 203*
[R. D. Delmont, N.J.] In each case, one seed had been inhaled completely blocking the trachea.--Courtesy/ Paul A. Stewart.

OTHER BIRDS

Arnhem, R. ÉTUDE DE L'EXPANSION DE L'AIRE DE NIDIFICATION DE LA GRIVE LITORNE *(TURDUS PILARIS)* EN EUROPE OCCIDENTALE. [STUDY OF THE EXTENT OF THE NESTING AREA OF THE FIELDFARE *(TURDUS PILARIS)* IN WESTERN EUROPE.] *Gerfaut* 59(1): 77-109, illus. 1969. [From Biol. Abstr. 51(23), 1970. In French with Flemish and English summ.] *WR 140: 203*
[Vogelringsta., Brasschaet, Belgium.]

Banks, Richard C. THE FOX SPARROW ON THE WEST SLOPE OF THE OREGON CASCADES. *Condor* 72(3): 369-370. July 1970. *WR 140: 203*
[U.S. Natl. Mus., Washington, D.C.] Habitat changes from logging operations apparently have encouraged range expansions by two separate populations, *Passerella iliaca fulva* and *P. i. megarhyncha.*--Courtesy/ Paul A. Stewart.

Baum, Horst. ZUR BIOLOGIE UND OEKOLOGIE DER AMSEL-*TURDUS MERULA*. [THE BIOLOGY AND ECOLOGY OF THE BLACKBIRD *TURDUS MERULA.*] *Emberiza* 2(1): 10-23, illus. 1969. [From Biol. Abstr. 51(24), 1970. In German.] *WR 140: 203*
[Roonstrasse 8, Giessen, Germany.]

Bell, H. L. THE FLAMED BOWERBIRD *SERICULUS AUREUS*. *Emu* 70(2): 64-68, 1 fig. + 2 pl. May 1970. *WR 140: 203*
[21 Agara St., Aranda, Australian Capital Territory, Australia.] Taxonomy, distribution and bower are discussed.

Borrett, R. P., and H. D. Jackson. THE EUROPEAN WHEATEAR *OENANTHE OENANTHE* (L.) IN SOUTHERN AFRICA. *Bull. British Ornithol. Club* 90(5): 124-129. Oct. 1970. *WR 140: 204*

Plumage, molt, and habitat are discussed.

Brown, R. G. B. FULMAR DISTRIBUTION: A CANADIAN PERSPECTIVE. *Ibis* 112(1): 44-51, 2 figs. Jan. 1970. *WR 140: 204*

[Canadian Wildl. Serv., Aurora, Ontario, Canada.] The Newfoundland and Greenland waters are colder than those off Nova Scotia, and it seems likely that temperature and other oceanographic factors, not fish offal, control fulmar distribution in the western Atlantic. Since the ringing returns show that many of these Canadian birds are from British colonies, it is possible that fish offal may not be the key factor in the eastern Atlantic either. The fulmar population in the warmer waters of the eastern Atlantic remains an anomaly; it is not yet possible to explain the differences in ecology between the eastern and western Atlantic birds, either in oceanographic terms, or by the availability of fish offal.--From summ.

Bub, Hans. ONIEMIECKICH BADANIACH NAD RZEPOLUCHEM, *CARDUELIS FLAVIROSTRIS* (L.). [GERMAN INVESTIGATIONS ON TWITE, *CARDUELIS FLAVIROSTRIS* (L.).] *Notatki Ornitol.* 8(2/3): 54-56, illus. 1967. [From Biol. Abstr. 51(17), 1970. In Polish.] *WR 140: 204*

[Vogelwarte Helgoland, Wilhelmshaven, Germany.]

Burke, V. E. M., and L. H. Brown. OBSERVATIONS ON THE BREEDING OF THE PINK-BACKED PELICAN *PELECANUS RUFESCENS*. *Ibis* 112(4): 499-512, 7 figs. Oct. 1970. *WR 140: 204*

[I.B.R.D. (World Bank), Box 4616, Addis Ababa, Ethiopia.] Thirty-five nests in the colony were closely observed out of approximately 250 nests. Twenty young fledged; heaviest mortality occurred between 10-30 days. The pelicans fed in the early morning, bringing fish back to the nest between 09.00 and 13.00 hrs. The breeding season lasted from August, towards the end of the rains, until March, at the end of the dry season.--From summ.

Collias, Nicholas E., and Elsie C. Collias. THE BEHAVIOUR OF THE WEST AFRICAN VILLAGE WEAVERBIRD. *Ibis* 112(4): 457-480, 3 figs. Oct. 1970. *WR 140: 204*

[Univ. Calif., Los Angeles.] Breeding behavior of *Ploceus cucullatus cucullatus*.

Curry, James Ronald. A COMPARATIVE ETHOECOLOGICAL STUDY OF THE CAROLINA CHICKADEE *(PARUS CAROLINENSIS)* AND TUFTED TITMOUSE *(PARUS BICOLOR)* IN CENTRAL OKLAHOMA. *Ph.D. thesis, Univ. Okla.* 149 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 204*

Deckert, G. ZUR ETHOLOGIE UND ÖKOLOGIE DES HAUSSPERLINGS *(PASSER D. DOMESTICUS* L.*)* IN DER BRUTZEIT. [ON THE ETHOLOGY AND ECOLOGY OF THE ENGLISH SPARROW *(PASSER D. DOMESTICUS)* DURING THE BREEDING SEASON.] *Beitr. Vogelk.* 15: 1-84. 1969. [From Ibis 112(3), 1970. In German.] *WR 140: 204*

Dittus, Wolfgang P. J., and Robert E. Lemon. AUDITORY FEEDBACK IN THE SINGING OF CARDINALS. *Ibis* 112(4): 544-548, 3 figs. Oct. 1970. *WR 140: 204*

[McGill Univ., Montreal, Quebec, Canada.] "Deafening not only prevents the further storage of information in the memory, it may also block access to the information already there."

Dow, Douglas D. DISTRIBUTION AND DISPERSAL OF THE CARDINAL, *RICHMONDENA CARDINALIS*, IN RELATION TO VEGETATIONAL COVER AND RIVER SYSTEMS. *Am. Midland Nat.* 84(1): 198-207, 3 figs. July 1970. *WR 140: 204*

[Univ. Queensland, St. Lucia, Brisbane, Australia.] Abstract: Cardinals, *Richmondena cardinalis*, were studied at four locations of different population density to determine if their presence was correlated with certain environmental

features. Distributional data were based on responses to tape-recorded cardinal song, and relationships were analyzed using linear regression techniques. An increase in woody cover, regardless of foliage type, was associated with an increase in cardinal numbers in all regions, but cardinals occupied even very sparse cover in Tennessee. A strong association with river systems noted in peripheral populations was not displayed by cardinals in the center of their range, and largely coniferous vegetation close to these rivers in any region did not appear to deter them. The edge of the cardinal's range in Ontario shows good agreement with snowfall distribution peculiar to the region. It is suggested that most dispersal is effected by young cardinals using rivers as guidelines and thus settling close to them through "inertia," and not because they offer the best available habitat. The cardinal's northward spread is likely limited by winter snow cover and concomitant food shortage rather than by unsuitable vegetation.

Emlen, Stephen T. THE INFLUENCE OF MAGNETIC INFORMATION ON THE ORIENTATION OF THE INDIGO BUNTING, *PASSERINA CYANEA*. *Animal Behaviour* 18(2): 215-224, 7 figs. May 1970. *WR 140: 205*
[Cornell Univ., Ithaca, N.Y.] "In summary, I have been unable to obtain experimental confirmation of the hypothesis that Indigo Buntings can perceive and use static magnetic fields as directional cues."

Enemar, A. [ON THE REDPOLL *CARDUELIS FLAMMEA* IN THE AMMARNÄS AREA, SWEDISH LAPLAND, IN 1968.] *Vår Fågelvärld* 28: 230-235, 1969. [From Auk 87(3), 1970. In Swedish with English summ.] *WR 140: 205*

Erdman, Thomas C. CURRENT MIGRANT SHRIKE STATUS IN WISCONSIN. *Passenger Pigeon* 32(4): 144-150, 4 figs. Winter 1970. *WR 140: 205*
Lanius ludovicianus was reported as a common species in Wisconsin in the 1930's. In 1967 in response to a questionnaire survey, Wisconsin birders reported sighting a total of 31 individual birds in the state, 13 of which were young from 3 nest sites. One probable and six positive nest sites were reported in 1968. Nest production averaged 4.3 in 1967, and 3.5 in 1968. The rapid decrease is possibly due to pesticides.

Eriksson, Kalervo. THE AUTUMN MIGRATION AND WINTERING ECOLOGY OF THE SISKIN *CARDUELIS SPINUS*. *Ornis Fennica* 47(2): 52-68, 3 figs. 1970. In English with Finnish summ. *WR 140: 205*
[Res. Lab. State Alcohol Monopoly, Helsinki, Box 10350, Finland.] The migration of the siskin regularly reaches its peak at the end of September. Migrating populations of siskins in the autumn in Finland and Norway fluctuate independently of each other, although there was one common peak in 1965. Actual migration takes place during a one-month period. Wintering areas may vary a little although the siskins migrate very regularly in the same direction. Nesting areas may also change from year to year.--From summ.

Feindt, P., and K. Jung. ZUM GAST- UND BRUTVORKOMMEN DER BARTMEISE *(PANURUS BIARMICUS)* IN SUD-NIEDERSACHSEN MIT ANGABEN ZUR BRUTBIOLOGIE. [ON THE OCCURRENCE AND BREEDING OF THE BEARDED TITMOUSE *(PANURUS BIARMICUS)* IN SOUTHERN LOWER SAXONY WITH DATA ON BREEDING BIOLOGY.] *Vogelwelt* 89: 3-14. 1968. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 205*

Fouarge, J. G. LE POUILLET SIFFLEUR *PHYLLOSCOPUS SIBILATRIX* BECHSTEIN. [THE WOOD WARBLER, *PHYLLOSCOPUS SIBILATRIX* BECHSTEIN.] *Gerfaut* 58(3/4): 179-368, illus. 1969. [From Biol. Abstr. 51(22), 1970. In French with English summ.] *WR 140: 205*
[Sta. Ornithol. "Hesbaye," Ombret, Belgium.]

Freeman, D. J. THE REDISCOVERY OF THE BLACK GRASS WREN *AMYTORNIS HOUSEI* WITH ADDITIONAL NOTES ON THIS SPECIES. *Em* 70(4): 193-195, 1 fig. Oct. 1970. *WR 140: 205*
[British Mus. Nat. Hist., Cromwell Rd., London, England.] Notes on the locality, habitat, and field behavior of the birds.

Frith, C. B. THE NEST AND NESTLING OF THE SHORT-TAILED PARADIGALLA *PARADIGALLA BREVICAUDA* (PARADISAEIDAE). *Bull. British Ornithol. Club* 90(5): 122-124, 1 fig. Oct. 1970. *WR 140: 206*
[British Mus. Nat. Hist., Cromwell Rd., London, England.] Description of specimen.

Frith, C. B. SYMPATRY OF *AMBLYORNIS SUBALARIS* AND *A. MACGREGORIAE* IN NEW GUINEA. *Emu* 70(4): 196-197, 2 figs. Oct. 1970. *WR 140: 206*
[British Mus. Nat. Hist., Cromwell Rd., London, England.]

Geluso, K. N. FOOD AND SURVIVAL PROBLEMS OF OKLAHOMA ROADRUNNERS IN WINTER. *Bull. Okla. Ornithol. Soc.* 2: 5-6. 1969. [From Auk 87(3), 1970.] *WR 140: 206*

Gorski, Leon John. SYSTEMATICS AND ECOLOGY OF SIBLING SPECIES OF TRAILL'S FLYCATCHER. *Ph.D. thesis, Univ. Conn.* 99 p. 1969. [From Dissertation Abstr. Intern. 30(8B), 1970.] *WR 140: 206*
Nesting and territorial habits of two songforms ("fitz-bew"s and "fee-bee-o"s) of Traill's flycatcher were studied. Results indicated that the two songforms are of valid biological species which do not interbreed when sympatric.

Gorski, Leon J. BANDING THE TWO SONGFORMS OF TRAILL'S FLYCATCHER. *Bird-Banding* 41(3): 204-206. July 1970. *WR 140: 206*
[Central Conn. State Coll., New Britain.] The two songforms of *Empidonax traillii* do not interbreed when sympatric.--Courtesy/ Paul A. Stewart.

Graber, Richard R., Jean W. Graber, and Ethelyn L. Kirk. ILLINOIS BIRDS: MIMIDAE. *Ill. Nat. Hist. Surv., Biol. Notes* no. 68. 38 p., 29 figs. Sept. 1970. *WR 140: 206*
[Ill. Nat. Hist. Surv., Urbana.] The status of the family Mimidae in Illinois is presented, based on the compilation of approximately 1500 published references, on field notes made by the authors and by Benjamin T. Gault, and on specimens in the scientific collections of the Natural History Survey and the Chicago Museum of Natural History. Discussion of the various species refers only to literature and data on Illinois occurrences. Graphs of annual cycles, distribution maps, and tables contain much of the assimilated information. The mockingbird, catbird, and brown thrasher are included.

Greenlaw, Jon Stanley. THE IMPORTANCE OF FOOD IN THE BREEDING SYSTEM OF THE RUFOUS-SIDED TOWHEE, *PIPILO ERYTHROPHTHALMUS* (L.). *Ph.D. thesis, Rutgers State Univ.* 228 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 206*
A variety of food-getting maneuvers were used by towhees foraging on the ground and occasionally above the ground in both study areas. Differences in the foraging repertoire of towhees in the two areas were correlated with differences in food density and dispersion. Available evidence on territory structure and populations does not support the idea that territoriality regulates population density of towhees. A time-energy model can be devised which predicts the ecological distribution of a species. The basic assumption of the model that different patches of the environment offer different potentials for a species to accumulate net energy per unit of foraging time is supported by the present study and information in the literature.

Grubb, Thomas C., Jr. BURROW DIGGING TECHNIQUES OF LEACH'S PETREL. *Auk* 87(3): 587-588, 1 fig. July 1970. *WR 140: 206*
[Univ. Wis., Madison.] In digging their nesting burrows Leach's petrels *(Oceanodroma leucorhoa)* use two methods: 1) rolling sideways to balance on one foot, they kick the dirt behind with the other foot; and 2) resting their weight on the breast with tail and folded wings elevated, they kick with alternate movements of both feet.--Courtesy/ Paul A. Stewart.

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Harris, M. P. DIFFERENCES IN THE DIET OF BRITISH AUKS. *Ibis* 112(4): 540-541. Oct. 1970. *WR 140: 207*
[Edward Grey Inst., Oxford, England.] "There are significant differences in the size of fish taken by each species and this is correlated with the size of the birds."

Haverschmidt, F. NOTES ON THE LIFE HISTORY OF THE MOUSE-COLORED FLYCATCHER IN SURINAM. *Condor* 72(3): 374-375, 1 fig. July 1970. *WR 140: 207*
[Wolfskuilstraat 16, Ommen, Holland.] *"Phaeomyias murina."*--Courtesy/ Paul A. Stewart.

Hellebrekers, W. P. J., and M. J. Tekke. BEKNOPT OVERZICHT VAN ZEKERE EN MOGELIJKE BROEDGEVALLEN VAN DE KRUISBEK *(LOXIA CURVIROSTRA)* IN 1967. [BRIEF SUMMARY OF CERTAIN AND POSSIBLE BROOD CASES OF THE CROSSBILL *(LOXIA CURVIROSTRA)* IN 1967.] *Limosa* 42(1/2): 32-33. 1969. [From Biol. Abstr. 51(17), 1970. In Dutch.] *WR 140: 207*

Hjalte, Krister. KORNSPARVENS *EMBERIZA CALANDRA* I SKÅNE 1965-1968. [THE CORN BUNTING IN SCANIA, SWEDEN, 1965-1968.] *Vår Fågelvärld* 28: 124-129. 1969. [From Bird-Banding 41(2), 1970. In Swedish with English summ.] *WR 140: 207*

Hubbs, Carl L., Arthur L. Kelly, and Conrad Limbaugh. DIVERSITY IN FEEDING BY BRANDT'S CORMORANT NEAR SAN DIEGO. *Calif. Fish & Game* 56(3): 156-165. July 1970. *WR 140: 207*
[Univ. Calif., San Diego.] Feeding behavior and foods of *Phalacrocorax penicillatus*.

Jackson, Jerome A. SOME ASPECTS OF THE POPULATION ECOLOGY OF DOWNY WOODPECKERS IN RELATION TO A FEEDING STATION. *Iowa Bird Life* 40(2): 27-34, 1 fig. June 1970. *WR 140: 207*
[Univ. Kans., Lawrence.] Interactions among downy woodpeckers and between downies and other species of birds are described: female downies are generally subordinate to males; downies are usually subordinate to larger birds; mutual tolerance between downy woodpeckers and black-capped chickadees may be related to association of the species in winter foraging flocks.--From summ.

Johnson, James C. RUBY-THROATED HUMMINGBIRD STUDIES. *Inland Bird Banding News* 42(3): 86-91, 4 figs. May-June 1970. *WR 140: 207*
[SR Box 500, Table Rock Heights, Hollister, Mo.] Construction and maintenance of several sugar-water feeders for hummingbirds are described.--Courtesy/ Paul A. Stewart.

Johnston, David W. AGE AND SEX DISTRIBUTION IN INDIGO BUNTINGS. *Bird-Banding* 41(2): 113-118. Apr. 1970. *WR 140: 207*
[Univ. Fla., Gainesville.] The cumulative totals of males:females reported from TV tower kills and mist-netting operations during nonbreeding seasons indicate an excess of males (1.46:1) in the population.--Courtesy/ Paul A. Stewart.

Kavanau, J. Lee, and J. Ramos. ROADRUNNERS: ACTIVITY OF CAPTIVE INDIVIDUALS. *Science* 169(3947): 780-782, 2 figs. 21 Aug. 1970. *WR 140: 207*
[Univ. Calif., Los Angeles.] Abstract: Two roadrunners, *Geococcyx californianus*, readily accepted an activity wheel as an outlet for locomotor activity. The birds were strictly diurnal and tended to be most active per unit of time in the predusk hours. There was less activity on partly overcast days than on clear days. Dim light and darkness were strongly inhibitory, even during daytime hours; bright light was stimulatory, even during nighttime hours. These findings appear to open the way for quantitative comparative studies of the influences of environmental factors on the activity of cursorial birds.

Kazama, Tatsuo, and Kazumasa Hasegawa. [SOME NOTES ON THE ROOSTING HABITS OF *HIRUNDO RUSTICA GUTTURALIS* SCOPOLI AT AKUDA, KASHIWAZAKI CITY, NIIGATA PREFECTURE.] *Tori Bull. Ornithol. Soc. Jap.* 19(86): 8-16, illus. 1969. [From Biol. Abstr. 51(20), 1970. In Japanese with English summ.] *WR 140: 208*
[Ornithol. Soc. Jap., Tokyo, Japan.]

Klafs, Gerhard. DIE GROSSTRAPPE *(OTIS TARDA* L.*)* IN MECKLENBURG. TEIL I: VORKOMMEN, BESTAND UND BEDEUTUNG BIS ZUR GEGENWART. [GREAT BUSTARD *(OTIS TARDA* L.*)* IN MECKLENBURG: I. OCCURRENCE, NUMBERS AND SIGNIFICANCE TO THE PRESENT.] *Arch. Naturschutz. Landschaftsforsch.* 8(1): 47-69, illus. 1968. [From Biol. Abstr. 51(20), 1970. In German with Russian and English summ.] *WR 140: 208*
[Inst. Landesforsch. Nat., Halle, Germany.]

Kniprath, E. NAHRUNG UND NAHRUNGSERWERB DES EISVOGELS, *ALCEDO ATTHIS.* [FOOD AND FEEDING OF THE KINGFISHER, *ALCEDO ATTHIS.*] *Vogelwelt* 90: 81-97. 1969. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 208*

Kury, Channing R., and Joseph M. Cadbury. THE WINTER DISTRIBUTION OF MAINE'S DOUBLE-CRESTED CORMORANTS. *Auk* 87(4): 815. Oct. 1970. *WR 140: 208*
[Cornell Univ., Ithaca, N.Y.] In December, January, and February, 72% of the Maine population is in Florida; 15% is in Alabama, Mississippi, Louisiana, and Texas; and 13% is in states north of Florida.--Courtesy/ Paul A. Stewart.

Lay, Daniel W., and Dennis N. Russell. NOTES ON THE RED-COCKADED WOODPECKER IN TEXAS. *Auk* 87(4): 781-786, 2 figs. Oct. 1970. *WR 140: 208*
[Texas Parks & Wildl. Dept., P.O. Box 4608 SFA Sta., Nacogdoches.] To survive, the red-cockaded woodpecker *(Dendrocopos borealis)* needs old trees whose value to the landowner is declining, and such trees are being removed faster than they are being replaced. In one area of 530 acres, 21 occupied trees were found.--Courtesy/ Paul A. Stewart.

Luniak, M. [THE OCCURRENCE OF THE NIGHTINGALE *LUSCINIA MEGARHYNCHOS* BREHM AND THE THRUSH-NIGHTINGALE *LUSCINIA LUSCINIA* (L.) IN WARSAW.] *Acta. Ornithol.* 11: 445-460. 1969. [From Ibis 112(4), 1970. In Polish with English summ.] *WR 140: 208*

Maclean, Gordon L. A STUDY OF SEEDSNIPE IN SOUTHERN SOUTH AMERICA. *Living Bird* 8: 33-80, 39 figs. 1969. *WR 140: 208*
[Univ. Natal, Pietermaritzburg, South Africa.] The distribution and habitats of *Thinocorus rumicivorus* and *T. orbignyianus* are described. The taxonomy of the genus is briefly dealt with and the systematics of the thinocoridae discussed. Seedsnipe of the genus *Thinocorus* feed exclusively on vegetable matter under natural conditions and never drink water; this applies to both adults and young of all ages. Chicks are never fed by their parents. Sufficient water is obtained from succulent and green leaves; this obviates the need to drink. Both species of *Thinocorus* breed in summer. Nests are typically charadriiform and lined with dry organic matter. The clutch is invariably four eggs, which are covered by the parent when she leaves the nest. Only the female incubates. The male lacks brood patches, while the female has one on each side of the abdominal midline. Breeding displays and songs of the males are described. Breeding territories vary in size according to the terrain and the population density. Nesting is not colonial. The incubation period is 25 to 26 days in the least seedsnipe. Parental care, calls, comfort movements, and other behavior patterns are described. Predators include a harrier and falcon and probably foxes.--From summ.

Maher, William J. ECOLOGY OF THE LONG-TAILED JAEGER AT LAKE HAZEN, ELLESMERE ISLAND. *Arctic* 23(2): 112-129, 3 figs. June 1970. In English with French and Russian summ. *WR 140: 208*
[Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada.] Abstract: Breeding density, timing, chick growth and food habits of a high population of long-tailed jaeger were studied in 1966. Breeding density fluctuated from 0 to 2

pairs per square mile (259 hectares) from 1961 to 1966; peak years were 1962 and 1966. Breeding success was 12 to 13% of eggs laid in 1966, and only 1 of 7 nests in 4 low years was successful. Published evidence suggests breeding success in peak years is usually high. Egg-laying dates vary widely between years and within populations. Occurrence of food items in 242 fresh and 710 old regurgitated pellets was, respectively, 90.1 and 94.0% lemming remains. Occurrence of other vertebrate prey (mostly birds) was 18.6 and 8.0%. Snow buntings were the most frequent bird (79.5 and 72.5%), and shorebirds the next most frequent group (9.1 and 21.6%). The percentage of juveniles among passerine birds was 83 and 79.4 and among shorebirds was 75 and 91. Insects occurred in 30% of new pellets.

Marshall, A. J. BOWER-BUILDING AND DECORATING BY THE REGENT BOWERBIRD IN CAPTIVITY. *Emu* 70(1): 28-29. Mar. 1970. *WR 140: 209*
[Monash Univ., Clayton, Australia.] *"Sericulus chrysocephalus."*

Middleton, A. L. A. FOODS AND FEEDING HABITS OF THE EUROPEAN GOLDFINCH NEAR MELBOURNE. *Emu* 70(1): 12-16, 1 fig. Mar. 1970. *WR 140: 209*
[Univ. Guelph, Guelph, Ontario, Canada.] Since its introduction to Australia the European goldfinch *Carduelis carduelis* has spread throughout much of the temperate south-eastern part of the continent, where it is now well established. During the non-breeding season feeding was carried out in flocks. Flock-feeding is described. A total of 33 plant items was identified as foods of the goldfinch, along with 10 insect items. With one exception, *Juncus* sp., the identified plants were exotics with 19 of them belonging to the family Cmmpositae. The insects were members of cosmopolitan families. The results of this study, when compared with information from Europe, suggest that the feeding habits and the foods of the goldfinch in Australia are essentially the same as in Europe.--From summ.

Middleton, A. L. A. THE BREEDING BIOLOGY OF THE GOLDFINCH IN SOUTH-EASTERN AUSTRALIA. *Emu* 70(4): 159-167. Oct. 1970. *WR 140: 209*
[Univ. Guelph, Guelph, Ontario, Canada.] Of 166 nests found, all but 14 were built in exotic shrubbery. Mean clutch-size was 4.8 eggs, and mean incubation and nesting periods of 13 and 15 days respectively were calculated. Only 28.9% of all nests in which eggs were laid produced fledglings. This low nesting success was apparently the combined result of predation, weather and desertion.--From summ.

Moss, W. Wayne, and Joseph H. Camin. NEST PARASITISM, PRODUCTIVITY, AND CLUTCH SIZE IN PURPLE MARTINS. *Science* 168(3934): 1000-1002, 2 figs. 22 May 1970. *WR 140: 209*
[Univ. Calif., Berkeley.] Abstract: Mean maximum nestling weight of purple martins decreased with increase in brood size from three to five. Martins in the absence of acarine nest parasites produced young heavier than parasitized young of the same brood size; in addition, unparasitized nestlings tended to reach a maximum weight equivalent to that of young in parasitized broods of one less member. Modal brood size for parasitized and unparasitized martins was four, but there was a significant trend toward production of broods of five by mite-free birds, and of broods of three by parasitized parents. This suggests a potentially important role for nest parasitism in the determination of clutch size in martins and other birds.

Munro, M. WELCOME SWALLOWS IN WHANGAREI COUNTY, 1962/68. *Notornis* 16: 198-201. 1969. [From Auk 87(3), 1970.] *WR 140: 209*

Murton, R. K., B. Lofts, and A. H. Orr. THE SIGNIFICANCE OF CIRCADIAN BASED PHOTOSENSITIVITY IN THE HOUSE SPARROW *PASSER DOMESTICUS*. *Ibis* 112(4): 448-456, 2 figs. + 2 pls. Oct. 1970. *WR 140: 209*
[Fisheries & Food, Infestation Control Lab., Worplesdon, Surrey, England.] Although all subjects received the same amount of photostimulation only those given schedules simulating long days responded with testicular growth and spermatogenesis.--From summ.

Ohmart, R. D., T. E. Chapman, and L. Z. McFarland. WATER TURNOVER IN ROADRUNNERS UNDER DIFFERENT ENVIRONMENTAL CONDITIONS. *Auk* 87(4): 787-793, 1 fig. Oct. 1970. *WR 140: 210*

[Ariz. State Univ., Tempe.] Captive roadrunners *(Geococcyx californianus)* turned over a mean of 41.8 ml of water per day under moderate moisture conditions; they reduced the mean loss to 26.2 ml per day in simulated desert conditions.--Courtesy/ Paul A. Stewart.

Oniki, Yoshika. NESTING BEHAVIOR OF REDDISH HERMITS *(PHAETHORNIS RUBER)* AND OCCURRENCE OF WASP CELLS IN NESTS. *Auk* 87(4): 720-728, 3 figs. Oct. 1970. *WR 140: 210*

[Univ. Kans., Lawrence.] Reports on the season of breeding, nest location, eggs, incubation, care of nestlings, nesting success, and occurrence of wasp *(Pison* sp.*)* nests in base of hermit nests.--Courtesy/ Paul A. Stewart.

Orden, Chr. van. DE VERSPREIDING VAN DE KLEINE BARMSIJS IN NOORDHOLLAND. [THE DISTRIBUTION OF THE LESSER REDPOLL IN NORTHERN NETHERLANDS.] *Levende Nat.* 70: 1-4. 1967. In Dutch. *WR 140: 210*

Phillips, Allan R., and Wesley E. Lanyon. ADDITIONAL NOTES ON THE FLYCATCHERS OF EASTERN NORTH AMERICA. *Bird-Banding* 41(3): 190-197, 1 fig. July 1970. *WR 140: 210*

[Univ. Nacl. Autonoma Mexico, Mexico City, Mexico.] Gives information to supplement that presented in an earlier publication appearing in *Bird-Banding* 37(3), 1966 (See *WR 124: 39).*--Courtesy/ Paul A. Stewart.

Pikula, Jiri. CONTRIBUTION TOWARDS THE KNOWLEDGE OF ECOLOGY AND BREEDING BIOLOGY OF *TURDUS PHILOMELOS* BREHM, 1831, IN CZECHOSLOVAKIA. *Zool. Listy* 18 (4): 343-368, illus. 1969. [From Biol. Abstr. 51(16), 1970.] *WR 140: 210*

[Czechoslovakian Acad. Sci., Brno, Czechoslovakia.]

Preston, William Converse. BREEDING ECOLOGY AND SOCIAL BEHAVIOR OF THE BLACK GUILLEMOT, *CEPPHUS GRYLLE. Ph.D. thesis, Univ. Mich.* 146 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 210*

Radermacher, Wilhelm. BEOBACHTUNGEN AN SPECHTEN. [OBSERVATIONS OF WOODPECKERS.] *Ornithol. Mitteil.* 22(9): 179-183. Sept. 1970. In German. *WR 140: 210*

[Post Seelscheid, Meisenbach, Germany.] *"Dendrocopus major, D. medius, D. minor, Picus viridis, P. canus,* and *Dryocopus martius."*

Rae, B. B. THE FOOD OF CORMORANTS AND SHAGS IN SCOTTISH ESTUARIES AND COASTAL WATERS. *Scotland Dept. Agr. Fish Marine Res.* (1969) no. 1. 16 p. 1969. [From Ibis 112(4), 1970.] *WR 140: 210*

Recher, H. F., and I. J. Abbott. SOME DIFFERENCES IN USE OF HABITAT BY WHITE-EARED AND WHITE-CHEEKED HONEYEATERS. *Emu* 70(3): 117-125, 4 figs. July 1970. *WR 140: 210*

[Australian Mus., 6-8 College St., South Sydney, Australia.] The two species, *Meliphaga leucotis* and *Phylidonyris nigra,* use different parts of the shared habitat.

Reilly, P. N. NESTING OF THE SUPERB LYREBIRD IN SHERBROOKE FOREST, VICTORIA. *Emu* 70(2): 73-78, 1 fig. May 1970. *WR 140: 210*

[40 Sherbrooke Surrey Group, 10 Hughes Street, Yarraville, Victoria, Australia.] *"Menura novaehollandiae."*

Reimers, N. F. [THE NUTCRACKER.] *Okhota & Okhotnich'e Khoz.* 1970(1): 20-22. 1970. [From Bird-Banding 41(3), 1970. In Russian.] *WR 140: 210*

"Nucifraga caryocatactes."

XUM

Rheinwald, G., and H. Gutscher. DISPERSION UND ORTSTREUE DER MEHLSCHWALBE *(DELICHON URBICA)*. [DISPERSION AND SITE TENACITY IN THE HOUSE MARTIN *(DELICHON URBICA)*.] *Vogelwelt* 90: 121-140. 1969. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 211*

Rowan, Mary K. A STUDY OF THE CAPE ROBIN IN SOUTHERN AFRICA. *Living Bird* 8: 5-32, 11 figs. + 1 frontispiece. 1969. *WR 140: 211*
[Univ. Capetown, Rondebosch, South Africa.] *"Cossypha caffra."*

Royama, T. FACTORS GOVERNING THE HUNTING BEHAVIOUR AND SELECTION OF FOOD BY THE GREAT TIT *(PARUS MAJOR* L.*)*. *J. Animal Ecol.* 39(3): 619-668, 14 figs. Oct. 1970. *WR 140: 211*
[Forest Res. Lab., Dept. Fisheries & Forestry, Fredericton, British Columbia, Canada.]

Ruge, Klaus. BEOBACHTUNGEN AM BLUTSPECHT *DENDROCOPOS SYRIACUS* IM BURGENLAND. [OBSERVATIONS ON THE SYRIAN WOODPECKER *DENDROCOPOS SYRIACUS* IN BURGENLAND, AUSTRIA.] *Vogelwelt* 90(6): 201-223, illus. 1969. [From Biol. Abstr. 51(15), 1970. In German with English summ.] *WR 140: 211*
[Staatl. Vogelschlzwarte, Baden-Wurttemberg, Germany.]

Ruschi, A. A DISTRIBUICÃO GEOGRÁFICA DE *KLAIS GUIMETI GUIMETI* (BOURCIER) 1843, E ALGUMAS OBSERVACÕES SOBRE A SUA BIOLOGIA E ECOLOGIA (TROCHILIDAE--AVES). [ON THE GEOGRAPHICAL DISTRIBUTION OF *KLAIS GUIMETI GUIMETI* AND SOME OBSERVATIONS ON ITS BIOLOGY AND ECOLOGY.] *Bol. Mus. Biol. Prof. Mello-Leitão, Zool.* no. 33: 1-9. 1968. [From Auk 87(3), 1970. In Portuguese with English summ.] *WR 140: 211*

Ruthke, P. DREI JAHRESBRUTEN BEIM EISVOGEL *(ALCEDO ATTHIS)*. [THREE BROODS IN A YEAR BY KINGFISHERS *(ALCEDO ATTHIS)*.] *Vogelwelt* 89: 129-137. 1968. [From Ibis 112(4), 1970. In German.] *WR 140: 211*

Schultz, R. CLOSED FIELD BEHAVIOUR OF THE WILD WHITE-CROWNED SPARROW, *ZONOTRICHIA LEUCOPHRYS NUTTALLI*. *J. Comp. Physiol. Psychol.* 70: 424-430. 1970. [From Ibis 112(4), 1970.] *WR 140: 211*

Serventy, D. L. TORPIDITY IN THE WHITE-BACKED SWALLOW. *Emu* 70(1): 27-28. Mar. 1970. *WR 140: 211*
[27 Everett St., Nedlands, Australia.] During a cold spell in 1936, a nesting cavity was found to contain 16-20 adult *Cheramoeca leucosternum* in a listless, torpid condition.

Shiovitz, Kenneth A., and William L. Thompson. GEOGRAPHIC VARIATION IN SONG COMPOSITION OF THE INDIGO BUNTING, *PASSERINA CYANEA*. *Animal Behaviour* 18(1): 151-158, 7 figs. Feb. 1970. *WR 140: 211*
[Wayne State Univ., Detroit, Mich.] A high degree of geographical figure dispersion is indicated. There is a limit to a number of figure-types occurring within any given population of indigo buntings. Average song length (in terms of the total number of figures and of the number of figure-types) is slightly greater in denser populations, while figure repetition is lower. It is suggested that new figures arise from alteration of existing figures in the learning process. The number of existing figure-types suggests that there is available to the species a finite number of different song patterns such that each bird could conceivably have a unique song.--From summ.

Snow, Barbara K. A FIELD STUDY OF THE BEARDED BELLBIRD IN TRINIDAD. *Ibis* 112(3): 299-329, 6 figs. + 1 pl. July 1970. *WR 140: 211*
[The Old Forge, Wingrave, Aylesbury, Buckinghamshire, England.] Adult males own a calling territory from which they call throughout most of the day, and throughout the year except for the period of molt. In each territory there are special saplings where display and mating take place. The female builds the

nest, incubates, and rears the chick on her own. The very inconspicuous nest is built of twigs that readily interlock. Nearly all the twigs are from two species of tree. The clutch consists of a single egg. The relationship between type of nest, clutch-size, feeding habits and sexual bonds in tropical forest birds is discussed.--From summ.

Stresemann, E., and V. Stresemann. IM SOMMER MAUSERNDE POPULATIONEN DER RAUCHSCHWALBE, *HIRUNDO RUSTICA*. [SUMMER-MOLTING POPULATIONS OF THE SWALLOW *HIRUNDO RUSTICA*.] *J. Ornithol.* 109: 475-484. 1968. [From Auk 87(3), 1970. In German with English summ.] *WR 140: 212*

Sudhaus, W. AM BRUTPLATZ DER ZWERGAMMER *(EMBERIZA PUSILLA)* IN NORDNORWEGEN. [ON THE BREEDING SITES OF THE LITTLE BUNTING *(EMBERIZA PUSILLA)* IN NORTHERN NORWAY.] *Vogelwelt* 90: 53-59. 1969. [From Ibis 112(4), 1970. In German with English summ.] *WR 140: 212*

Svensson, Lars. BESTAMNINGEN AV FORSTA FYNDET AV BERGSANGARE *PHYLLOSCOPUS BONELLI* OCH ANDRA FYNDET AV VIDESANGARE *PHYLLOSCOPUS SCHWARZI* I SVERIGE. [THE IDENTIFICATION OF THE FIRST RECORD OF BONELLI'S WARBLER *PHYLLOSCOPUS BONELLI* AND THE SECOND RECORD OF RADDE'S BUSH WARBLER *PHYLLOSCOPUS SCHWARZI* IN SWEDEN.] *Vår Fågelvärld* 28(2): 130-132. 1969. [From Biol. Abstr. 51(17), 1970. In Swedish with English summ.] *WR 140: 212*
[Upplandsgatan 29, Stockholm, Sweden.]

Swainson, G. W. DISTRACTION DISPLAY IN THE BELL MINER. *Emu* 70(4): 199. Oct. 1970. *WR 140: 212*
[2 Ramsay St., Bayswater, Australia.] *"Manorina melanophrys."*

Tate, James Leroy, Jr. FORAGING BEHAVIOR OF THE EASTERN YELLOW-BELLIED SAPSUCKER *(SPHYRAPICUS VARIUS VARIUS)*. *Ph.D. thesis, Univ. Nebr.* 144 p. 1969. [From Dissertation Abstr. Intern. 30(7B), 1970.] *WR 140: 212*
Type of feeding holes as well as type of tree utilized by yellow-bellied sapsuckers varies with season. Feeding activity changes with cloud cover, possibly as a result of changes in photosynthate available from the tree. Summer and winter feeding seems to exhibit no directional distribution of food tap holes.

Teren, Stefan. BESTAND UND SCHUTZ GROSSTRAPPE *(OTIS TARDA* L.*)* IN DER ČSSR. [STATUS AND PROTECTION OF THE HOOPOE *(OTIS TARDA* L.*)* IN CZECHOSLOVAKIA.] *VIII Intern. Congr. Game Biol.* p. 376-379, 2 figs. 1970. In German with Russian summ. *WR 140: 212*
[Czechoslovak Union Game Mgmt., Bratislava, Czechoslovakia.]

Vermeer, Kees. COLONIES OF DOUBLE-CRESTED CORMORANTS AND WHITE PELICANS IN SASKATCHEWAN. *Canadian Field-Nat.* 84(1): 39-42, 2 figs. Jan.-Mar. 1970. *WR 140: 212*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Abstract: A survey of double-crested cormorants and white pelican colonies was made in Saskatchewan in 1968. Nine colonies of double-crested cormorants with a total of 1078 nests and eight colonies of white pelicans with a total of 6,558 nests were observed. One new location with the largest nesting population of white pelicans in Canada has been described. Because of a decline of breeding colonies of both species, protection of their nesting habitat has been urged.

Vermeer, Kees. DISTRIBUTION AND SIZE OF COLONIES OF WHITE PELICANS, *PELECANUS ERYTHRORHYNCHOS*, IN CANADA. *Canadian J. Zool.* 48(5): 1029-1032, 1 fig. Sept. 1970. *WR 140: 212*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Abstract: On the basis of a count of 14,103 nests, the total breeding population of white pelicans in Canada was estimated to consist of 30,000 birds for the years 1967-1969, seven times higher than previous estimates. The boundaries of the Canadian breeding range of pelicans were found to coincide closely with the 0°C isotherm

in April, the southern boundary of the Canadian Shield, and the eastern boundary of the Rocky Mountains. As those factors appeared to be closely related to the availability of fish, it is concluded that the extent of the breeding range of the pelicans in Canada is mainly determined by the food supply. Besides availability of fish, pelicans appeared to require nesting sites inaccessible to mammalian predators.

Victoria, Janice Krutak. ENVIRONMENTAL AND BEHAVIORAL FACTORS INFLUENCING EGG-LAYING AND INCUBATION IN THE VILLAGE WEAVERBIRD, *PLOCEUS CUCULLATUS*. *Ph.D. thesis, Univ. Calif.* 105 p. 1969. [From Dissertation Abstr. Intern. 30(11B), 1970.] *WR 140: 213*

Studies were made on nest and mate selection, nest-lining, oviposition, incubation behavior, clutch characteristics, egg recognition, and the development of reproductive behavior in yearling females.

Von Frisch, Otto. ZUR JUGENDENTWICKLUNG UND ETHOLOGIE DES SPIESSFLUGHUHNS *(PTEROCLES ALCHATA)*. [ON THE DEVELOPMENT OF THE YOUNG AND THE ETHOLOGY OF THE PIN-TAILED SANDGROUSE *(PTEROCLES ALCHATA)*.] *Bonner Zool. Beitr.* 20(1-3): 130-144, illus. 1969. [From Biol. Abstr. 51(16), 1970. In German.] *WR 140: 213*

[Inst. Brunswick, Brunswick, Germany.]

Wallace, Gary O. WINTER FLOCK STRUCTURE AND BEHAVIOR OF THE CAROLINA CHICKADEE. *Migrant* 41(2): 25-29. June 1970. *WR 140: 213*

Carolina chickadee flocks apparently are not led by any one bird. The first bird to move into a new feeding area might be one of the last to leave. The average rate of movement of Carolina chickadee flocks was about 1,200 feet per hour. The average number of Carolina chickadee per flock was 4.1 birds. Carolina chickadees frequently flock with other species, particularly the tufted titmouse.--From summ.

Ward, W. V. KERMADEC ISLANDS EXPEDITION REPORTS / BIO-ACOUSTICS ON THE EXPEDITION. *Notornis* 16: 163-171. 1969. [From Auk 87(3), 1970.] *WR 140: 213 "Rhegmatorhina."*

Weise, Hans-Joachim. ÜBER DAS VORKOMMEN DES EISVOGELS *(ALCEDO ATTHIS)* IN BERLINER TIERGARTEN. [OCCURRENCE OF THE KINGFISHER *(ALCEDO ATTHIS)* AT THE ZOOLOGICAL GARDEN OF BERLIN.] *Ornithol. Mitteil.* 20(10): 203-210, illus. 1968. [From Biol. Abstr. 51(19), 1970. In German.] *WR 140: 213*

[Handelallee, Berlin, Germany.]

Will, Raymond Lawrence. FECUNDITY, DENSITY, AND MOVEMENTS OF A HOUSE SPARROW POPULATION IN SOUTHERN ILLINOIS. *Ph.D. thesis, Univ. Ill.* 74 p. 1969. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 213*

Threshold temperatures for initiation of egg laying, based on the five-day average ambient temperature, varied between extremes of 1.5°C for inside nests and 15°C for outside ones. The average clutch size was 4.46. The average hatching percentage was 66, while the average fledging percentage was 35. The highest total population, less than double the initial breeding population, occurred at the end of August.

Zeleny, Lawrence. BLUEBIRD NESTING BOX PROJECT--1969. *Atlantic Nat.* 25(1): 33-38. Spring 1970. *WR 140: 213*

A total of 546 bluebirds fledged from 100 nest boxes in 1969. Brood failures and their possible causes are discussed.

Zusi, Richard L. ECOLOGY AND ADAPTATIONS OF THE TREMBLER ON THE ISLAND OF DOMINICA. *Living Bird* 8: 137-164, 10 figs. 1969. *WR 140: 213*

[Natl. Mus. Nat. Hist., Smithsonian Inst., Washington, D.C.] The trembler *(Cinclocerthia ruficauda)* is a mimid endemic to the Lesser Antilles. Its food consists of insects and other invertebrates as well as small frogs and lizards taken from the ground or from tree trunks and limbs and their epiphytes; it

also takes fruits of forest trees and shrubs. On the ground it tosses leaves to uncover prey. Most feeding is done among epiphytes and clumps of dead leaves, and food is taken from crevices such as are found on trunks or in tangled vines. Birds sometimes forage in loose bands with one or two birds foraging in a given tree at one time. The trembler is named for its habit of trembling the wings. Trembling makes the bird conspicuous as it hops through the trees searching for foraging sites. Trembling is not an aid for flushing prey; rather it appears to be a social signal with aggressive content that may serve to keep foraging birds distributed in different trees.--From summ.

REPTILES & AMPHIBIANS

Anderson, James D. DESCRIPTION OF THE SPERMATOPHORE OF *AMBYSTOMA TIGRINUM*. *Herpetologica* 26(3): 304-308, 1 fig. Sept. 1970. *WR 140: 214*
[Rutgers Univ., Newark, N.J.]

Applegarth, John S., and Benjamin H. Banta. A NOTABLE OCCURRENCE OF *SCELOPORUS GRACIOSUS VANDENBURGIANUS* COPE (REPTILIA: LACERTILIA) IN THE SANTA CRUZ MOUNTAINS OF CALIFORNIA, WITH COMMENTS ON ITS LIFE HISTORY, ECOLOGY, TAXONOMY, AND ZOOGEOGRAPHY. *Wasmann J. Biol.* 28(2): 191-198, 2 figs. Fall 1970. *WR 140: 214*
[Univ. N. Mex., Albuquerque.]

Asplund, Kenneth K. METABOLIC SCOPE AND BODY TEMPERATURES OF WHIPTAIL LIZARDS *(CNEMIDOPHORUS)*. *Herpetologica* 26(4): 403-411, 4 figs. Dec. 1970. *WR 140: 214*
[Va. Commonwealth Univ., Richmond.]

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[Univ. West Indies, St. Augustine, Trinidad, West Indies.]

Barbault, Robert. RECHERCHES ÉCOLOGIQUES DANS LA SAVANE DE LAMTO (CÔTE D'IVOIRE): LES TRAITS QUANTITATIFS DU PEUPLEMENT DES OPHIDIENS. [ECOLOGICAL RESEARCH IN THE LAMTO SAVANNA (IVORY COAST): QUANTITATIVE FEATURES OF THE SNAKE POPULATION.] *Terre & Vie* 24(1): 94-107, 5 figs. Jan.-Mar. 1970. In French with English summ. *WR 140: 214*
[École Normale Supérieure, 24 rue Lhomond, Paris, France.] There are definite seasonal changes in numbers and biomass. Snake populations reach their peak of abundance at the end of the rains and their low in February and March. Births take place from April to August. Most snakes in Lamto complete their whole life-cycle in a year and their population turnover is very rapid. There is a close parallel between the seasonal variations of the amphibian and lizard biomasses on one hand and those of their snake predators on the other.--From summ.

Batson, Jackie David. A LIFE HISTORY AND GEOGRAPHIC VARIATION STUDY OF *AMBYSTOMA TEXANUM* (MATTHES), THE SMALL-MOUTHED SALAMANDER. *Ph.D. thesis, Univ. Ky.* 84 p. 1965. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 214*

Bennett, David H., J. Whitfield Gibbons, and J. Christian Franson. TERRESTRIAL ACTIVITY IN AQUATIC TURTLES. *Ecology* 51(4): 738-740, 1 fig. Summer 1970. *WR 140: 214*
[Savannah River Ecol. Lab., Aiken, S.C.] Aquatic turtles *(Kinosternon subrubrum, Pseudemys scripta,* and *Deirochelys reticularia)* were tagged with Tantalum-182 pins and later relocated. Turtles were found burrowed at various depths (2-11 cm) below the surface and up to 600 m from the aquatic environment. The number of days an individual was followed and the land distance moved were significantly correlated.--From abstr. Courtesy/ Paul A. Stewart.

XUM

Bennett, Shaun Michael. HOMING, DENSITY AND POPULATION DYNAMICS IN THE ADULT NEWT, *NOTOPTHALMUS VIRIDESCENS* RAFINESQUE. *Ph.D. thesis, Dartmouth Coll.* 223 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 215*

Berry, P. Y. THE FOOD OF THE GIANT TOAD *BUFO ASPER*. *Zool. J. Linnean Soc.* 49(2): 61-68, illus. 1970. [From Biol. Abstr. 51(24), 1970.] *WR 140: 215*
[Univ. Malaya, Kuala Lumpur, Malaysia.]

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Boulenger, G. A. CONTRIBUTIONS TO AMERICAN HERPETOLOGY / COLLECTED PAPERS. *Soc. Study Amphibians & Reptiles Facsimile Reprints in Herpetol.* 1877 et seq. For sale by Publications Secretary Henri C. Seibert, Ohio Univ., Athens. *WR 140: 215*
The collected works of G. A. Boulenger are being reprinted from various journals published in the late 1800's and early 1900's. The articles include descriptions of new species; family synopses; variations in descriptions, habitats, and distributions of individual species; fauna lists, and notes on anomalies and physiological characteristics of reptiles and amphibians. The following issues are consecutively paged and are presently available:

Part 1,	1877-1881,	32 pages.	$ .75
Part 2,	1882-1883,	48 pages.	$1.00
Part 3,	1884-1885,	44 pages.	$1.00
Part 4,	1886-1887,	56 pages.	$1.00
Part 5,	1888,	32 pages.	$1.00
Part 6,	1889-1890,	48 pages.	
Part 7,	1891-1893,	44 pages.	
Part 8,	1894,	40 pages.	
Part 9,	1895-1896,	48 pages.	

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[Oreg. State Univ., Corvallis.]

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[Stanford Univ., Stanford, Calif.]

Bruce, Richard C. THE LARVAL LIFE OF THE THREE-LINED SALAMANDER, *EURYCEA LONGICAUDA GUTTOLINEATA*. *Copeia* 1970(4): 776-779, 2 figs. 12 Dec. 1970. *WR 140: 215*
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Bustard, H. Robert. THE ECOLOGY OF THE AUSTRALIAN GECKOS *DIPLODACTYLUS WILLIAMSI* AND *GEHYRA AUSTRALIS* IN NORTHERN NEW SOUTH WALES: I. *Proc. Kon. Ned. Akad. Wetensch. Ser. C Biol. Med. Sci.* 72(4): 451-466, illus. 1969. [From Biol. Abstr. 51(23), 1970.] *WR 140: 216*
[Australian Natl. Univ., Canberra, Australia.]

Bustard, H. Robert. THE ECOLOGY OF THE AUSTRALIAN GECKOS *DIPLODACTYLUS WILLIAMSI* AND *GEHYRA AUSTRALIS* IN NORTHERN NEW SOUTH WALES: II. *Proc. Kon. Ned. Akad. Wetensch. Ser. C Biol. Med. Sci.* 72(4): 467-477. 1969. [From Biol. Abstr. 51(23), 1970.] *WR 140: 216*
[Australian Natl. Univ., Canberra, Australia.]

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[Australian Natl. Univ., Canberra, Australia.] Recommendations for conserving two species of crocodiles and developing a productive native industry from the hides in Papua and New Guinea.

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Bustard, H. Robert. A POPULATION STUDY OF THE SCINCID LIZARD *EGERNIA STRIOLATA* IN NORTHERN NEW SOUTH WALES: II. *Proc. Kon. Ned Akad. Wetensch. Ser. C Biol. Med. Sci.* 73(2): 202-213, illus. 1970. [From Biol. Abstr. 51(22), 1970.] *WR 140: 216*
[Australian Natl. Univ., Canberra, Australia.]

Bustard, H. Robert. THE ROLE OF BEHAVIOR IN THE NATURAL REGULATION OF NUMBERS IN THE GEKKONID LIZARD *GEHYRA VARIEGATA*. *Ecology* 51(4): 724-728, 1 fig. Summer 1970. *WR 140: 216*
[Australian Natl. Univ., Canberra, Australia.] The number of females inhabiting a given ecological niche in association with a single male was limited by social interactions of the females and not by food supply.--Courtesy/ Paul A. Stewart.

Bustard, H. Robert. TURTLES AND AN IGUANA IN FIJI. *Oryx* 10(5): 317-322, 1 fig. + 2 pls. Sept. 1970. *WR 140: 216*
[Australian Natl. Univ., Canberra, Australia.] Despite protective legislation, the sea turtles nesting in the Fiji Islands are rapidly being reduced by poachers.

Bustard, H. Robert, and Colin Limpus. FIRST INTERNATIONAL RECAPTURE OF AN AUSTRALIAN TAGGED LOGGERHEAD TURTLE. *Herpetologica* 26(3): 358-359. Sept. 1970. *WR 140: 216*
[Australian Natl. Univ., Canberra, Australia.]

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[301-621 Gilbert Rd., Richmond, British Columbia, Canada.] *"Thamnophis elegans vagrans."*

Carpenter, Charles C. MISCELLANEOUS NOTES ON GALAPAGOS LAVA LIZARDS *(TROPIDURUS--IGUANIDAE)*. *Herpetologica* 26(3): 377-386, 2 figs. Sept. 1970. *WR 140: 216*
[Univ. Okla., Norman.] Comparative sizes, reproduction, cloacal temperatures, discrimination, feeding behavior and miscellaneous observations.

Carpenter, Charles C., Judy A. Badham, and Bill Kimble. BEHAVIOR PATTERNS OF THREE SPECIES OF *AMPHIBOLURUS* (AGAMIDAE). *Copeia* 1970(3): 497-505, 3 figs. 3 Sept. 1970. *WR 140: 217*
[Univ. Okla., Norman.]

Carr, Archie. SO EXCELLENT A FISHE / A NATURAL HISTORY OF SEA TURTLES. *Nat. Hist. Press* (Garden City, N.Y.). x + 248 p. + 45 pls., 5.75 x 8.5 in. 1967. Price $5.95. *WR 140: 217*
An interesting account of marine turtle studies, written for a popular audience and based on several decades of investigation. Leatherbacks, hawkbills, and loggerheads are included, but the primary emphasis of this book is on the ridley and green turtles of the Caribbean. An ambitious tagging program has helped the investigators to trace some of the movements of the green turtle, and special hatcheries were set up to allow close observation of hatchling behavior. Much of the turtles' life cycle remains a mystery, however, for the movements of immature turtles are still unknown. The importance of vision as a navigational aid is known, but the mechanics of open-sea navigation are still under intensive study.

Carr, Archie, and Donald Goodman. ECOLOGIC IMPLICATIONS OF SIZE AND GROWTH IN *CHELONIA*. *Copeia* 1970(4): 783-786, 3 figs. 12 Dec. 1970. *WR 140: 217*
[Univ. Fla., Gainesville.]

Chiu, K. W., and W. G. Lynn. SLOUGHING AND THE HYPOPHYSIS IN THE GLOSSY SNAKE, *ARIZONA ELEGANS*. *Am. Midland Nat.* 84(2): 554-560, 1 fig. Oct. 1970. *WR 140: 217*
[Chung Chi Coll., Chinese Univ., Hong Kong.]

Chlodny, Jozef, and Tadeusz Mazur. FOOD REQUIREMENTS AND UTILIZATION OF FOOD BY *RANA ARVALIS* NILSS. (AMPHIBIA). *Ekologia Poleka--Ser. A* 17(38): 719-733, illus. 1969. [From Biol. Abstr. 51(22), 1970. In English with Polish summ.] *WR 140: 217*
[Univ. Slaski, Katowice, Poland.]

Christiansen, James Learned. REPRODUCTION IN *CNEMIDOPHORUS INORNATUS* AND *C. NEOMEXICANUS*. *Ph.D. thesis, Univ. N. Mex.* 247 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 217*
The aggressive behavior of *C. neomexicanus*, its ability to exist in disturbed habitat where *C. inornatus* cannot exist, and its ability to exist in areas where food is scarce, give *C. neomexicanus* a short-term advantage over *C. inornatus*. The greater genetic variation characteristic of *C. inornatus* probably gives this species a long-term advantage.

Clark, William Taylor III. PREDATION BY THE TOAD *BUFO VALLICEPS* AND REGULATION OF DENSITY IN PREY POPULATIONS OF THE PILLBUG ISOPOD *ARMADILLIDIUM VULGARE*. *Ph.D. thesis, Univ. Texas* (Austin). 141 p. 1969. [From Dissertation Abstr. Intern. 30(12B), 1970.] *WR 140: 217*
Performance of test and control populations, and population projections based on summer-long predation, indicated that predation had no regulatory effect. This suggests that predation by adult toads in the field does not regulate natural pillbug populations. Prey population performance and habitat preferences suggested characteristics of a predator that would effectively regulate pillbug populations: (1) size similar to that of prey; (2) fast numerical response to prey population growth; (3) high mobility; (4) specificity for prey. The inverse relationships of survivorship (without predation) and natality to density suggested a population regulatory process involving decreased survivorship and natality as density increases.

Cloudsley-Thompson, J. L. ON THE BIOLOGY OF THE DESERT TORTOISE *TESTUDO SULCATA* IN SUDAN. *J. Zool.* 160(1): 17-33, illus. 1970. [From Biol. Abstr. 51(15), 1970.] *WR 140: 217*
[Univ. Khartoum, Khartoum, Sudan.]

Cohen, Allen C., and Brian C. Myres. A FUNCTION OF THE HORNS (SUPRAOCULAR SCALES) IN THE SIDEWINDER RATTLESNAKE, *CROTALUS CERASTES*, WITH COMMENTS ON OTHER HORNED SNAKES. *Copeia* 1970(3): 574-575, 2 figs. 3 Sept. 1970. *WR 140: 218*
[Cypress Coll., Cypress, Calif.]

Crans, Wayne J. PRELIMINARY OBSERVATIONS OF FROG FILARIASIS IN NEW JERSEY. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 342-347, 2 figs. July 1969. *WR 140: 218*
[Rutgers Univ., New Brunswick, N.J.] Abstract: New Jersey bullfrogs, *Rana catesbeiana*, were found to be heavily infested with filarial worms of the genus *Foleyella* Seurat 1917. A technique was devised to rapidly screen amphibians for the infection. The results of a state-wide survey are presented and a possible life cycle is suggested. Preliminary transmission studies indicated the mosquito, *Culex territans*, to be a natural vector.

Cristea, Elisabeta, A. Cristea, and B. Demetriuc. CITEVA CONSIDERATII BIOLOGICE CU PRIVIRE LA BROASTELE COMESTIBILE *(RANA RIDIBUNDA* SI *RANA ESCULENTA)* DIN LUNCA SI DELTA DUNARII. [SOME BIOLOGICAL CONSIDERATIONS CONCERNING THE EDIBLE FROG *(RANA RIDIBUNDA* AND *RANA ESCULENTA)* FROM THE DANUBE FLOODED ZONE AND DELTA.] *Bul. Inst. Cercet. Proiect. Piscic.* 28(4): 83-90. 1969. [From Biol. Abstr. 51(17), 1970. In Romanian with French, Russian, and English summ.] *WR 140: 218*
[Sta. cercet. piscicole, Braila, Romania.]

Cuellar, Orlando. REPRODUCTION IN THE PARTHENOGENETIC LIZARD *CNEMIDOPHORUS UNIPARENS*. *Ph.D. thesis, Univ. Colo.* 79 p. 1969. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 218*

DeBenedictis, Paul Alfred. INTERSPECIFIC COMPETITION BETWEEN TADPOLES OF *RANA PIPIENS* AND *RANA SYLVATICA*: AN EXPERIMENTAL FIELD STUDY. *Ph.D. thesis, Univ. Mich.* 80 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 218*

Ditmars, Raymond L. REPTILES OF THE WORLD (Revised edition). *Macmillan Co.* (New York). xx + 321 p. + 89 pls., 6.5 x 9.5 in. 1966. Price $8.50. *WR 140: 218*
Reptiles of the World is a comprehensive book on the life cycles of the reptiles, covering the food, habits, environment, and reproduction of the crocodilians, turtles, tortoises, lizards, and snakes. The work is intended to be general, and as such, elaborate description is limited to groups. Representative types have been selected and treated according to their anatomical characteristics and habits. The text emphasizes North American species, while the plates include more photographs of South American and Old World reptiles.

Dunson, William A. SOME ASPECTS OF ELECTROLYTE AND WATER BALANCE IN THREE ESTUARINE REPTILES, THE DIAMONDBACK TERRAPIN, AMERICAN AND "SALT WATER" CROCODILES. *Comp. Biochem. Physiol.* 32(2): 161-174, illus. 1970. [From Biol. Abstr. 51(15), 1970.] *WR 140: 218*
[Pa. State Univ., University Park.] *"Malaclemys terrapin, Crocodylus acutus* and *C. porosus."*

Echternacht, Arthur Charles. A REVIEW OF MIDDLE AMERICAN LIZARDS OF THE GENUS *AMEIVA* (TEIIDAE) WITH EMPHASIS ON GEOGRAPHIC VARIATION. *Ph.D. thesis, Univ. Kans.* 254 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 218*

Elick, Gerald Eugene. WATER LOSS, TEMPERATURE TOLERANCES AND TEMPERATURE PREFERENDA OF SMALL SECRETIVE COLUBRID SNAKES IN RELATION TO HABITAT SELECTION. *Ph.D. thesis, Univ. Ark.* 76 p. 1970. [From Dissertation Abstr. Intern. 31 (6B), 1970.] *WR 140: 218*

Endler, John. KINESTHETIC ORIENTATION IN THE CALIFORNIA NEWT *(TARICHA TOROSA)*. *Behaviour* 37(1-2): 15-23, 2 figs. 1970. In English with French summ. *WR 140: 219*
[Univ. Calif., Berkeley.]

Ernst, Carl Henry. NATURAL HISTORY AND ECOLOGY OF THE PAINTED TURTLE, *CHRYSEMYS PICTA* (SCHNEIDER). *Ph.D. thesis, Univ. Ky.* 229 p. 1969. [From Dissertation Abstr. Intern. 30(8B), 1970.] *WR 140: 219*
A field study of *Chrysemys picta* was conducted to investigate habitat preference, daily behavior, and growth and development.

Ernst, Carl H. HOMING ABILITY IN THE PAINTED TURTLE, *CHRYSEMYS PICTA* (SCHNEIDER). *Herpetologica* 26(4): 399-403. Dec. 1970. *WR 140: 219*
[Southwest Minn. State Coll., Marshall.] Abstract: Homing ability of the painted turtle, *Chrysemys picta*, was studied. Turtles returned from a displacement of one mile with the current and one and two miles against the current. A discussion of orientation in *Chrysemys picta* is given.

Ewert, J. P., I. Speckhardt, and W. Amelang. VISUELLE INHIBITION UND EXZITATION IM BEUTEFANGVERHALTEN DER ERDKROETE *BUFO BUFO* (L.). [VISUAL INHIBITION AND EXCITATION IN THE PREY-CATCHING BEHAVIOR OF THE COMMON TOAD *(BUFO BUFO).*] *Z. Vergl. Physiol.* 68(1): 84-110, illus. 1970. [From Biol. Abstr. 51(24), 1970. In German with English summ.] *WR 140: 219*
[Zool. Inst., Darmstadt, Germany.]

Ewert, Michael Allyn. SEASONAL MOVEMENTS OF THE TOADS *BUFO AMERICANUS* AND *B. COGNATUS* IN NORTHWESTERN MINNESOTA. *Ph.D. thesis, Univ. Minn.* 217 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 219*

Ferguson, Gary Wright. GEOGRAPHIC VARIATION AND EVOLUTION OF STEREOTYPED BEHAVIORAL PATTERNS OF THE SIDE-BLOTCHED LIZARDS OF THE GENUS *UTA* (IGUANIDAE). *Ph.D. thesis, Univ. Mich.* 105 p. 1969. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 219*

Ferguson, Gary W. MATING BEHAVIOUR OF THE SIDE-BLOTCHED LIZARDS OF THE GENUS *UTA* (SAURIA: IGUANIDAE). *Animal Behaviour* 18(1): 65-72, 3 figs. Feb. 1970. *WR 140: 219*
[Univ. Mich., Ann Arbor.] Four stages of the mating behavior of *Uta*, approaching, licking, neck-holding, and copulation are described. Some aspects of mating behavior are more stereotyped within *Uta* populations than between populations. However, none of the geographic differences are sufficiently great to be useful for subspecific diagnosis.--From summ.

Fishbeck, Dale Wade. A STUDY OF SOME PHASES IN THE ECOLOGY OF *RANA SYLVATICA* LE CONTE. *Ph.D. thesis, Univ. Minn.* 168 p. 1968. [From Dissertation Abstr. Intern. 30(1B), 1969.] *WR 140: 219*
Breeding behavior, tadpole growth, and the stripe polymorphism of *Rana sylvatica* in Minn. are discussed.

Fitch, Henry S., and Robert R. Fleet. NATURAL HISTORY OF THE MILK SNAKE *(LAMPROPELTIS TRIANGULUM)* IN NORTHEASTERN KANSAS. *Herpetologica* 26(4): 387-396, 2 figs. Dec. 1970. *WR 140: 219*
[Univ. Kans., Lawrence.]

Fraker, Mark A. HOME RANGE AND HOMING IN THE WATERSNAKE, *NATRIX SIPEDON SIPEDON*. *Copeia* 1970(4): 665-673, 5 figs. 12 Dec. 1970. *WR 140: 219*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Franz, Richard. ADDITIONAL NOTES ON THE FEEDING OF LARVAL GIANT SALAMANDERS, *DICAMPTODON ENSATUS*. *Bull. Md. Herpetol. Soc.* 6(3): 51-52. Sept. 1970. *WR 140: 220*
[2643 N. Charles St., Baltimore, Md.] Larval caddis were consumed intact; the stick cases and sclerotized portions of the larvae were excreted.

Franz, Richard. FOOD OF LARVAL TAILED FROGS. *Bull. Md. Herpetol. Soc.* 6 (3): 49-51. Sept. 1970. *WR 140: 220*
[2643 N. Charles St., Baltimore, Md.] The larvae of the tailed frog *Ascaphus truei* were found to feed exclusively on diatoms. Occasionally other algae, some small insect larvae and mineral matter were secondarily ingested. Only the diatoms with ruptured walls appeared to be acted on.--From discussion.

Franz, Richard, and David S. Lee. THE ECOLOGICAL AND BIOGEOGRAPHICAL DISTRIBUTION OF THE TAILED FROG, *ASCAPHUS TRUEI*, IN THE FLATHEAD RIVER DRAINAGE OF NORTHWESTERN MONTANA. *Bull. Md. Herpetol. Soc.* 6(4): 62-73, 2 figs. Dec. 1970. *WR 140: 220*
[2643 N. Charles St., Baltimore, Md.]

Garton, John S., Earl W. Harris, and Ronald A. Brandon. DESCRIPTIVE AND ECOLOGICAL NOTES ON *NATRIX CYCLOPION* IN ILLINOIS. *Herpetologica* 26(4): 454-461. Dec. 1970. *WR 140: 220*
[Southern Ill. Univ., Carbondale.] Data on the ecology, size, scutellation, and pigmentation of 24 specimens and one newborn litter of 12 *Natrix cyclopion* from Illinois are given. Marginal habitat and abundance of *Agkistrodon piscivorus* probably contribute to scarcity of *N. cyclopion* in southern Illinois. Few *Natrix* of any species were found where *A. piscivorus* was abundant. *N. cyclopion*, unlike other species of *Natrix*, is apparently restricted in southern Illinois to Austroriparian swampland where it is ecologically sympatric with *A. piscivorus*. Twelve young were born on 28 August 1969, and another female contained 14 half-term embryos on 25 July 1969.--From abstr.

Gehlbach, Frederick R., and Braz Walker. ACOUSTIC BEHAVIOR OF THE AQUATIC SALAMANDER, *SIREN INTERMEDIA*. *BioScience* 20(20): 1107-1108, 1 fig. 15 Oct. 1970. *WR 140: 220*
[Baylor Univ., Waco, Texas.] Resting sirens usually are mute but may produce trains of pulsed sounds or clicks. Head-jerking and simultaneous clicking are conspicuous if two or more individuals emerge from their burrows within a few centimeters of each other. The clicking sounds appear functionally involved in intraspecific communication.

Goldberg, Stephen Robert. OVARIAN CYCLE OF THE MOUNTAIN SPINY LIZARD *SCELOPORUS JARROVI* COPE. *Ph.D. thesis, Univ. Ariz.* 128 p. 1970. [From Dissertation Abstr. Intern. 31(4B), 1970.] *WR 140: 220*

Gourley, Eugene Vincent. ORIENTATION OF THE GOPHER TORTOISE, *GOPHERUS POLYPHEMUS* (DAUDIN). *Ph.D. thesis, Univ. Fla.* 135 p. 1969. [From Dissertation Abstr. Intern. 31(1B), 1970.] *WR 140: 220*

Greene, Harry W. MODE OF REPRODUCTION IN LIZARDS AND SNAKES OF THE GOMEZ FARIAS REGION, TAMAULIPAS, MEXICO. *Copeia* 1970(3): 565-568. 3 Sept. 1970. *WR 140: 220*
[P.O. Box 855, Huntsville, Texas.]

Greer, Allen E. EVOLUTIONARY AND SYSTEMATIC SIGNIFICANCE OF CROCODILIAN NESTING HABITS. *Nature* 227(5257): 523-524, 1 fig. 1 Aug. 1970. *WR 140: 220*
[Harvard Univ., Cambridge, Mass.]

Grubb, Jerry C. ORIENTATION IN POST-REPRODUCTIVE MEXICAN TOADS, *BUFO VALLICEPS*. *Copeia* 1970(4): 674-680, 5 figs. 12 Dec. 1970. *WR 140: 220*
[Univ. Texas, Austin.]

Gyi, Ko Ko. A REVISION OF COLUBRID SNAKES OF THE SUBFAMILY HOMALOPSINAE. *Univ. Kans. Publ., Mus. Nat. Hist.* 20(2): 47-223, 38 figs. 30 Dec. 1970. *WR 140: 221*
[Univ. Rangoon, Rangoon, Burma.]

Haapanen, Antti. SITE TENACITY OF THE COMMON FROG *(RANA TEMPORARIA* L.*)* AND THE MOOR FROG *(R. ARVALIS* NILSS.*)*. *Ann. Zool. Fenn.* 7(1): 61-66, illus. 1970. [From Biol. Abstr. 51(20), 1970.] *WR 140: 221*
[Forest Res. Inst., Nat. Conserv. Office, Helsinki, Finland.]

Haertel, John D., and Robert M. Storm. EXPERIMENTAL HYBRIDIZATION BETWEEN *RANA PRETIOSA* AND *RANA CASCADAE*. *Herpetologica* 26(4): 436-446, 3 figs. Dec. 1970. *WR 140: 221*
[S. Dak. State Univ., Brookings.]

Hall, Russell J. ECOLOGY OF A POPULATION OF THE GREAT PLAINS SKINK *(EUMECES OBSOLETUS)*. *Ph.D. thesis, Univ. Kans.* 142 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 221*

Hassinger, Dawn D., James D. Anderson, and George H. Dalrymple. THE EARLY LIFE HISTORY AND ECOLOGY OF *AMBYSTOMA TIGRINUM* AND *AMBYSTOMA OPACUM* IN NEW JERSEY. *Am. Midland Nat.* 84(2): 474-495, 6 figs. Oct. 1970. *WR 140: 221*
[Rutgers Univ., Newark, N.J.]

Healy, William R. REDUCTION OF NEOTENY IN MASSACHUSETTS POPULATIONS OF *NOTOPHTHALMUS VIRIDESCENS*. *Copeia* 1970(3): 578-581. Aug. 1970. *WR 140: 221*
[Coll. Holy Cross, Worcester, Mass.]

Henderson, Robert W. FEEDING BEHAVIOR, DIGESTION, AND WATER REQUIREMENTS OF *DIADOPHIS PUNCTATUS ARNYI* KENNICOTT. *Herpetologica* 26(4): 520-526, 2 figs. Dec. 1970. *WR 140: 221*
[2130 N. 89th Street, Wauwatosa, Wis.] Abstract: Specimens of *Diadophis punctatus arnyi* were fed various food items and kept at temperatures between 3 and 36 C. Chemical cues appeared to be the greatest aid in locating prey. Snakes consumed up to 45% of their weight at a single feeding. The average ratios of weight gained to weight of food consumed was 1:3.9 for young snakes and 1:3.1 for adults. Age, amount of food consumed, and temperature affected digestion. Water requirements of *D. p. arnyi* increase with the temperature, and *Diadophis* is susceptible to dehydration. The weights of nonfeeding snakes did not usually fluctuate more than 0.5 g a week and no snake lost more than 50% of its original weight at death. High and low temperatures affected normal behavior. Ptyalism, biting and chewing, and tail coiling were observed.

Heusser, H. DIE LEBENSWEISE DER ERDKROETE *BUFO BUFO* (L.): WANDERUNGEN UND SOMMERQUARTIERE. [THE BEHAVIOUR OF THE COMMON TOAD *BUFO BUFO*. MIGRATION AND SUMMER HABITAT.] *Rev. Suisse Zool.* 75(4): 927-982, illus. 1968. [From Biol. Abstr. 51(16), 1970. In German with French and English summ.] *WR 140: 221*

Heusser, H. DIE LEBENSWEISE DER ERDKROETE, *BUFO BUFO* (L.): DAS ORIENTIERUNGS-PROBLEM. [THE WAY OF LIFE OF THE COMMON TOAD, *BUFO BUFO* (L.): THE PROBLEM OF ORIENTATION.] *Rev. Suisse Zool.* 76(2): 443-518, illus. 1969. [From Biol. Abstr. 51(15), 1970. In German with French and English summ.] *WR 140: 221*

Heyer, W. Ronald, and Sukhum Pongsapipatana. GLIDING SPEEDS OF *PTYCHOZOON LIONATUM* (REPTILIA: GEKKONIDAE) AND *CHRYSOPELEA ORNATA* (REPTILIA: COLUBRIDAE). *Herpetologica* 26(3): 317-319. Sept. 1970. *WR 140: 221*
[Pacific Lutheran Univ., Tacoma, Wash.]

Hillis, Robert Ellsworth. CERTAIN ASPECTS OF THE ECOLOGY OF *CRYPTOBRANCHUS ALLEGANIENSIS* DAUDIN EMPHASIZING HOME RANGE, POPULATION STRUCTURE AND HOMING. *Ph.D. thesis, Pa. State Univ.* 60 p. 1969. [From Dissertation Abstr. Intern. 31(4B), 1970.] *WR 140: 221*

Hoffman, Loren H. OBSERVATIONS ON GESTATION IN THE GARTER SNAKE, *THAMNOPHIS SIRTALIS SIRTALIS*. *Copeia* 1970(4): 779-780. 12 Dec. 1970. *WR 140: 222*
[Vanderbilt Univ. School Med., Nashville, Tenn.]

Honig, J. EINE FLIEGE REDUZIERT KROETENBESTAENDE. [A FLY REDUCES TOAD POPULATIONS.] *Kleintier-Praxis* 14(4): 109-110, illus. 1969. [From Biol. Abstr. 51(20), 1970. In German.] *WR 140: 222*
"Bufo bufo, B. viridis, and *Rana temporaria."*

Hoogmoed, M. S. NOTES ON THE HERPETOFAUNA OF SURINAM I: ITINERARY OF A HERPETOLOGICAL COLLECTING TRIP IN SURINAM IN 1968. *Zool. Meded. Rijksmus. Natuur. Hist. Leiden* 44(4): 47-73, illus. 1969. [From Biol. Abstr. 51(24), 1970.] *WR 140: 222*
[Rijksmus. Nat. Hist., Leiden, Netherlands.]

Hurlbert, Stuart H. THE POST-LARVAL MIGRATION OF THE RED-SPOTTED NEWT *NOTOPHTHALMUS VIRIDESCENS* (RAFINESQUE). *Copeia* 1970(3): 515-528, 5 figs. 3 Sept. 1970. *WR 140: 222*
[San Diego State Coll., San Diego, Calif.]

Jackson, Crawford G., Jr. A BIOMETRICAL STUDY OF GROWTH IN *PSEUDEMYS CONCINNA SUWANNIENSIS*. I. *Copeia* 1970(3): 528-534, 2 figs. 3 Sept. 1970. *WR 140: 222*
[San Diego State Coll., San Diego, Calif.] Data for an eight-year period indicate that carapace length, carapace width, plastron length, anterior plastron width, posterior plastron width, and bridge width increase at a greater absolute rate in females.--From abstr.

Jackson, Crawford G., Jr., and Macdonald Fulton. A TURTLE COLONY EPIZOOTIC APPARENTLY OF MICROBIAL ORIGIN. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Atlanta, Georgia, May 6-8, 1970.) J. Wildl. Diseases* (formerly Bull. Wildl. Disease Assoc.) 6(4): 466-468, 1 fig. Oct. 1970. *WR 140: 222*

Jackson, Marguerite M., Crawford G. Jackson, Jr., and Macdonald Fulton. INVESTIGATION OF THE ENTERIC BACTERIA OF THE TESTUDINATA--I: OCCURRENCE OF THE GENERA *ARIZONA, CITROBACTER, EDWARDSIELLA* AND *SALMONELLA*. In: *(Proceedings of the annual conference of the Wildlife Disease Association / Ames, Iowa, June 16-20, 1969.) Bull. Wildl. Disease Assoc.* 5(3): 328-329. July 1969. *WR 140: 222*
[Miss. State Coll. Women, Columbus.]

Jaeger, Robert Gordon. COMPETITIVE EXCLUSION AND ENVIRONMENTAL TOLERANCES IN THE DISTRIBUTIONS OF TWO SPECIES OF SALAMANDERS (GENUS *PLETHODON*) IN VIRGINIA. *Ph.D. thesis, Univ. Md.* 195 p. 1969. [From Dissertation Abstr. Intern. 31(3B), 1970.] *WR 140: 222*

Jenssen, Thomas Alan. ETHOECOLOGY AND DISPLAY ANALYSIS OF *ANOLIS NEBULOSUS* (SAURIA, IGUANIDAE). *Ph.D. thesis, Univ. Okla.* 249 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 222*
Territorial and reproductive behavior were studied as well as the species' assertion display-action-pattern which appears to be population-specific and is used by the female for species recognition and mate selection.

Johnson, Clifford Ray. DEFENSIVE DISPLAYS IN SOME AUSTRALIAN *DENISONIA* (SERPENTES: ELAPIDAE). *Herpetologica* 26(4): 516-520, 1 fig. Dec. 1970. *WR 140: 222*
[Univ. Queensland, St. Lucia, Brisbane, Australia.] Abstract: Defensive displays in two Australian elapid snakes, *Denisonia maculata devisii* and *D. daemelii*, are described from field and laboratory observations.

XUM

Johnson, Clifford Ray. ESCAPE BEHAVIOR AND CAMOUFLAGE IN TWO SUBSPECIES OF *SCELOPORUS OCCIDENTALIS*. *Am. Midland Nat.* 84(1): 280-282, 2 figs. July 1970. *WR 140: 223*

[Univ. Queensland, St. Lucia, Brisbane, Australia.] Abstract: During the summer of 1968, the escape behavior and degree of cryptic coloration of *Sceloporus o. occidentalis* and *S. o. biseriatus* were investigated. Approach distance is correlated with the degree of cryptic coloration in males, females and juveniles of both subspecies. Factors responsible for such behavior are discussed.

Johnson, Clifford Ray. HERPETOFAUNA OF QUANG NAM PROVINCE, SOUTH VIET NAM. *Herpetologica* 26(4): 527-532, 1 fig. Dec. 1970. *WR 140: 223*

[Univ. Queensland, St. Lucia, Brisbane, Australia.] Abstract: A collection of 159 amphibians and reptiles taken in Quang Nam Province, South Viet Nam in 1965 includes 23 species (1 toad, 11 frogs, 3 lizards, and 8 snakes). Localities, habitats, size, and variation are discussed.

Jordon, Ralph, Jr. DEATH-FEIGNING IN A CAPTIVE RED-BELLIED SNAKE, *STORERIA OCCIPITOMACULATA* (STORER). *Herpetologica* 26(4): 466-468, 1 fig. Dec. 1970. *WR 140: 223*

[Auburn Univ., Auburn, Ala.]

Kauffeld, Carl. SNAKES: THE KEEPER AND THE KEPT. *Doubleday & Co., Inc.* (Garden City, N.Y.). xii + 248 p. + 24 pls., 5.75 x 8.5 in. 1969. Price $5.95. *WR 140: 223*

The care of captive snakes is discussed in depth, including how to select snakes, the most favorable environment in which to keep them and how to create it, their feeding habits, proper feeding and cage conditions, diseases and how to recognize them and proper medical treatment of ill or injured snakes. The major part of the book is concerned with the author's snake-hunting trips to various parts of the world and some of the interesting experiences he has had with snakes.

Kay, Fenton R., Bruce W. Miller, and Carolyn L. Miller. FOOD HABITS AND REPRODUCTION OF *CALLISAURUS DRACONOIDES* IN DEATH VALLEY, CALIFORNIA. *Herpetologica* 26(4): 431-436, 1 fig. Dec. 1970. *WR 140: 223*

[N. Mex. State Univ., Las Cruces.]

Kourany, Miguel, Charles W. Myers, and Curt R. Schneider. PANAMANIAN AMPHIBIANS AND REPTILES AS CARRIERS OF *SALMONELLA*. *Am. J. Trop. Med. Hyg.* 19 (4): 632-638, 2 figs. July 1970. *WR 140: 223*

A minimum of 19 spp. of *Salmonella* was isolated. Most of the species have been implicated in salmonellosis and diarrheal diseases in man. Lizards of the genus *Ameiva* showed the highest incidence of infection, with 50.5% of 101 specimens harboring *Salmonella*. Specimens from the genera *Sceloporus, Basiliscus,* and *Cnemidophorus* were also infected, but to lesser degrees. The giant toad, *Bufo marinus*, generally was more abundant in areas disturbed by man than elsewhere, and was infected in moderate numbers (7.6%).--From abstr.

Kowalski, Władysław, and Marian Młynarski. UWAGI O PŁAZACH I GADACH PIENIŃSKIEGO PARKU NARODOWEGO. [NOTES ON THE AMPHIBIANS AND REPTILES OF THE PIENINY NATIONAL PARK.] *Ochrona Przyrody* 31: 87-115, 13 figs. 1965. In Polish with English summ. *WR 140: 223*

[Polish Acad. Sci., Cracow, Poland.] Annotated list of the 15 spp. found in this Park located in the Carpathian mountains.

Lardner, Peter James. DIURNAL AND SEASONAL LOCOMOTORY ACTIVITY IN THE GILA MONSTER, *HELODERMA SUSPECTUM* COPE. *Ph.D. thesis, Univ. Ariz.* 115 p. 1969. [From Dissertation Abstr. Intern. 30(6B), 1969.] *WR 140: 223*

Lee, C. Y., and L. F. Tseng. SPECIES DIFFERENCES IN SUSCEPTIBILITY TO ELAPID VENOMS. *Toxicon* 7(2): 89-93, illus. 1969. [From Biol. Abstr. 51 (15), 1970.] *WR 140: 224*
[Nat. Taiwan Univ., Taipei, Taiwan.]

Lee, David S. A LIST OF THE AMPHIBIANS AND REPTILES OF FLORIDA. *Bull. Md. Herpetol. Soc.* 6(4): 74-80. Dec. 1970. *WR 140: 224*
[2643 N. Charles St., Baltimore, Md.]

Lemkau, Philip J. MOVEMENTS OF THE BOX TURTLE, *TERRAPENE C. CAROLINA* (LINNAEUS) IN UNFAMILIAR TERRITORY. *Copeia* 1970(4): 781-783, 1 fig. 12 Dec. 1970. *WR 140: 224*
[5107 Roland Ave., Baltimore, Md.]

León, Juan R. THE SYSTEMATICS OF THE FROGS OF THE *HYLA RUBRA* GROUP IN MIDDLE AMERICA. *Univ. Kans. Mus. Nat. Hist.* 18(6): 507-545, 7 figs. + 4 pls. 2 Dec. 1970. *WR 140: 224*
Description and natural history of 7 spp.

Lynch, John D. SYSTEMATIC STATUS OF THE AMERICAN LEPTODACTYLID FROG GENERA *ENGYSTOMOPS, EUPEMPHIX,* AND *PHYSALAEMUS. Copeia* 1970(3): 488-496, 3 figs. 3 Sept. 1970. *WR 140: 224*
[Univ. Nebr., Lincoln.]

Madison, D. M., and C. Robert Shoop. HOMING BEHAVIOR, ORIENTATION, AND HOME RANGE OF SALAMANDERS TAGGED WITH TANTALUM-182. *Science* 168(3939): 1484-1487, 2 figs. 19 June 1970. *WR 140: 224*
[Univ. Wis., Madison.] Abstract: Using radioactive tags, we recorded movements of salamanders *(Plethodon jordani)* in their home areas and during homing. Males occupied home areas about three times larger than those of females and made occasional excursions into outlying regions. Homing after 22- to 60-meter displacements was direct and rapid, once initiated. Course headings at 1 meter from release were random; those at 2 meters and more were home-oriented. Males initiated homing movements sooner than females, although both sexes traveled at similar rates. Increased incidence of climbing on vegetation after displacement suggests olfactory mechanisms of orientation. These observations give direct evidence of homing orientation in caudate amphibians.

Marcellini, Dale Leroy. ETHOECOLOGY OF *HEMIDACTYLUS FRENATUS* (SAURIA, GEKKONIDAE) WITH EMPHASIS ON ACOUSTIC BEHAVIOR. *Ph.D. thesis, Univ. Okla.* 208 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 224*

Marion, Ken R. TEMPERATURE AS THE REPRODUCTIVE CUE FOR THE FEMALE FENCE LIZARD *SCELOPORUS UNDULATUS. Copeia* 1970(3): 562-564. 3 Sept. 1970. *WR 140: 224*
[Washington Univ., St. Louis, Mo.] "The current experiments have demonstrated that by mid-winter essentially total reproductive response to warmth, regardless of photoperiod, is shown. This is well before the period of permanent emergence from hibernation in nature, thereby enabling *S. undulatus* to be ready to undergo vitellogenesis and follicle enlargement in response to warmth shortly after emergence."

Martin, William Forrest. STUDIES OF SOUND COMMUNICATION SYSTEMS IN ANURAN AMPHIBIANS. *Ph.D. thesis, Univ. Texas* (Austin). 266 p. 1970. [From Dissertation Abstr. Intern. 31(4B), 1970.] *WR 140: 224*

XUM

McKenzie, Donald S., and Robert M. Storm. PATTERNS OF HABITAT SELECTION IN THE CLOUDED SALAMANDER, *ANEIDES FERREUS* (COPE). *Herpetologica* 26(4): 450-454, 1 fig. Dec. 1970. *WR 140: 225*
[Oreg. State Univ., Corvallis.] Abstract: Simulated field conditions were used to study habitat selection of the clouded salamander, *Aneides ferreus*. adult, subadult and young display somewhat different preferences at different temperatures. Young selected bark litter; subadults selected bark litter at higher temperatures, but displayed no preference between rock and bark at a lower temperature. Adults exhibited no marked preference between bark litter and rock litter.

McKinney, Charles Oran. AN ANALYSIS OF ZONES OF INTERGRADATION IN THE SIDE-BLOTCHED LIZARD, *UTA STANSBURIANA* (SAURIA: IGUANIDAE). *Ph.D. thesis, Univ. Mich.* 104 p. 1969. [From Dissertation Abstr. Intern. 30(9B), 1970.] *WR 140: 225*
An analysis of the geographic variation of color pattern, morphology, electrophoretic patterns of plasma proteins, and push-up display behavior of three subspecies of utas *(U. s. stansburiana, U. s. elegans,* and *U. s. nevadensis)* was made for the purpose of understanding process of speciation.

Metter, Dean E., Wayne R. Morris, and Donald A. Kangas. GREAT PLAINS ANURANS IN CENTRAL MISSOURI. *Copeia* 1970(4): 780-781. 12 Dec. 1970. *WR 140: 225*
[Univ. Mo., Columbia.]

Michałowski, Jerzy. WPŁYW GOSPODARKI LUDZKIEJ NA MECHANIZMY IZOLACYJNE U PŁAZÓW. [THE IMPACT OF MAN'S ECONOMIC OPERATIONS UPON THE ISOLATING MECHANISMS IN AMPHIBIANS.] *Ochrona Przyrody* 31: 77-86. 1965. In Polish with English summ. *WR 140: 225*

Milstead, William W. LATE SUMMER BEHAVIOR OF THE LIZARDS *SCELOPORUS MERRIAMI* AND *UROSAURUS ORNATUS* IN THE FIELD. *Herpetologica* 26(3): 343-354, 1 fig. Sept. 1970. *WR 140: 225*
[Univ. Mo., Kansas City.] Home range and territoriality are the major topics of discussion.

Minnich, John E. EVAPORATIVE WATER LOSS FROM THE DESERT IGUANA, *DIPSOSAURUS DORSALIS*. *Copeia* 1970(3): 575-577, 1 fig. 3 Sept. 1970. *WR 140: 225*
[Univ. Wis., Milwaukee.]

Minnich, John E., and Vaughan H. Shoemaker. DIET, BEHAVIOR AND WATER TURNOVER IN THE DESERT IGUANA, *DIPSOSAURUS DORSALIS*. *Am. Midland Nat.* 84(2): 496-509, 4 figs. Oct. 1970. *WR 140: 225*
[Univ. Wis., Milwaukee.]

Morris, Ronald L., and Wilmer W. Tanner. THE ECOLOGY OF THE WESTERN SPOTTED FROG, *RANA PRETIOSA* BAIRD AND GIRARD: A LIFE HISTORY STUDY. *Great Basin Nat.* 29(2): 45-81, illus. 1969. [From Biol. Abstr. 51(23), 1970.] *WR 140: 225*
[Brigham Young Univ., Provo, Utah.]

Myers, Charles W. THE SYSTEMATICS OF *RHADINAEA* (COLUBRIDAE), A GENUS OF NEW WORLD SNAKES. (VOLUMES I AND II). *Ph.D. thesis, Univ. Kans.* 680 p. 1970. [From Dissertation Abstr. Intern. 31(6B), 1970.] *WR 140: 225*

Norden, Arnold. A NOTE ON THE BEHAVIOR OF THE SAND SKINK *NEOSEPS REYNOLDSI*. *Bull. Md. Herpetol. Soc.* 6(4): 80-81. Dec. 1970. *WR 140: 225*
[2643 N. Charles St., Baltimore, Md.] Rigid defense posture.

Nussbaum, Ronald A. *DICAMPTODON COPEI*, N. SP., FROM THE PACIFIC NORTHWEST, U.S.A. (AMPHIBIA: CAUDATA: AMBYSTOMATIDAE). *Copeia* 1970(3): 506-514, 10 figs. 3 Sept. 1970. *WR 140: 225*
[Oreg. State Univ., Corvallis.]

Ojasti, Juhani, CONSIDERACIONES SOBRE LA ECOLOGIA Y CONSERVACIÓN DE LA TORTUGA *"PODOCNEMIS EXPANSA"* (CHELONIA, PELOMEDUSIDAE). [CONSIDERATIONS UPON THE ECOLOGY AND CONSERVATION OF THE TORTOISE, *PODOCNEMIS EXPANSA*, (CHELONIA, PELOMEDUSIDAE).] *Atas Simpósio sôbre Biota Amazônica* 7: 201-206, 2 figs. 1967. In Spanish. *WR 140: 226*
[Estación Biol. Rancho Grande, Apt. 184, Maracay, Venezuela.]

Osgood, David W. THERMOREGULATION IN WATER SNAKES STUDIED BY TELEMETRY. *Copeia* 1970(3): 568-570, 1 fig. 3 Sept. 1970. *WR 140: 226*
[Butler Univ., Indianapolis, Ind.]

Paillette, Madeleine. CONDITIONS BIOPHYSIQUES DU DECLENCHEMENT DU SIGNAL SONORE CHEZ *HYLA MERIDIONALIS* (AMPHIBIEN ANOURE). [BIOPHYSICAL CONDITIONS ON THE MATING CALLS OF *HYLA MERIDIONALIS* (AMPHIBIA, ANURA).] *Terre & Vie* 1970(2): 251-299, 6 figs. Apr.-June 1970. In French with English summ. *WR 140: 226*
[Lab. Physiol. Acoustique, I.N.R.A., Jouy-en-Josas, France.]

Palmer, William M., and George Tregembo. NOTES ON THE NATURAL HISTORY OF THE SCARLET SNAKE *CEMOPHORA COCCINEA COPEI* JAN IN NORTH CAROLINA. *Herpetologica* 26(3): 300-302. Sept. 1970. *WR 140: 226*
[N.C. State Mus. Nat. Hist., Raleigh.] Abstract: Distribution, habitat, activity, feeding behavior, and eggs of the snake *Cemophora coccinea copei* in North Carolina are described.

Parker, I. S. C., and R. M. Watson. CROCODILE DISTRIBUTION AND STATUS IN THE MAJOR WATERS OF WESTERN AND CENTRAL UGANDA IN 1969. *East African Wildl. J.* 8: 85-103, 5 figs. Aug. 1970. *WR 140: 226*
[P.O. Box 30678, Nairobi, Kenya.]

Perry, Roger. TORTOISES V. RATS AND GOATS IN THE GALAPAGOS. *Oryx* 10(5): 298-301, 1 fig. + 4 pls. Sept. 1970. *WR 140: 226*
Efforts are being made to protect the remaining subspecies of tortoises from predation and habitat destruction by introduced rats and goats.

Pianka, Eric R. COMPARATIVE AUTECOLOGY OF THE LIZARD *CNEMIDOPHORUS TIGRIS* IN DIFFERENT PARTS OF ITS GEOGRAPHIC RANGE. *Ecology* 51(4): 703-720, 11 figs. Summer 1970. *WR 140: 226*
[Univ. Texas, Austin.] The following are discussed: seasonal periods of activity in northern and more southern parts of range, abundance related to total precipitation, food in different parts of range, incidence of predation in different parts of range, adjustments to an arid environment, and numbers of eggs laid in relation to the amount of precipitation.--Courtesy/ Paul A. Stewart.

Pough, F. Harvey. A QUICK METHOD FOR PERMANENTLY MARKING SNAKES AND TURTLES. *Herpetologica* 26(4): 428-430, 1 fig. Dec. 1970. *WR 140: 226*
[Cornell Univ., Ithaca, N.Y.]

Preston, William Burton. THE COMPARATIVE ECOLOGY OF TWO WATER SNAKES, *NATRIX RHOMBIFERA* AND *NATRIX ERYTHROGASTER*, IN OKLAHOMA. *Ph.D. thesis, Univ. Okla.* 85 p. 1970. [From Dissertation Abstr. Intern. 31(2B), 1970.] *WR 140: 226*
Food habits, aquatic tendencies and temperature appeared to be the most important factors separating the two species ecologically.

Prestrude, A. M., and F. T. Crawford. TONIC IMMOBILITY IN THE LIZARD, *IGUANA IGUANA*. *Animal Behaviour* 18(2): 391-395, 3 figs. May 1970. *WR 140: 226*
[Va. Polytech. Inst., Blacksburg.]

Ray, A. Joseph, Jr. INSTRUMENTAL AVOIDANCE LEARNING BY THE TIGER SALAMANDER *AMBYSTOMA TIGRINUM*. *Animal Behaviour* 18(1): 73-77, 4 figs. Feb. 1970. *WR 140: 227*
[Carleton Univ., Ottawa, Canada.] Performance of avoidance responses increased gradually until many animals were 90% correct on the last 2 days of training. The interval between trials and between the two sequential stimuli did not affect the rate of learning. The findings indicate that tiger salamanders may be usefully employed in experiments on learning, particularly paleocortical contributions to learning.--From summ.

Roberts, James Oliver. VARIATIONS IN SALINITY TOLERANCE IN THE PACIFIC TREEFROG, *HYLA REGILLA*, IN OREGON. *Ph.D. thesis, Oreg. State Univ.* 58 p. 1970. [From Dissertation Abstr. Intern. 31(5B), 1970.] *WR 140: 227*

Ruibal, Rodolfo, and Richard Philibosian. EURYTHERMY AND NICHE EXPANSION IN LIZARDS. *Copeia* 1970(4): 645-653, 5 figs. 12 Dec. 1970. *WR 140: 227*
[Univ. Calif., Riverside.] *"Anolis* spp. and *Uta stansburiana."*

Sanderson, Roger A. NOTES ON A COMMUNAL NESTING SITE OF *STERNOTHERUS ODORATUS*. *Bull. Md. Herpetol. Soc.* 6(4): 81-82. Dec. 1970. *WR 140: 227*
[Avon Park High School, Avon Park, Fla.]

Schaaf, Raymond T., and John S. Garton. RACCOON PREDATION ON THE AMERICAN TOAD, *BUFO AMERICANUS*. *Herpetologica* 26(3): 334-335. Sept. 1970. *WR 140: 227*
[Southern Ill. Univ., Carbondale.]

Schoener, Thomas W. NONSYNCHRONOUS SPATIAL OVERLAP OF LIZARDS IN PATCHY HABITATS. *Ecology* 51(3): 408-418. Late Spring 1970. *WR 140: 227*
[Harvard Univ., Cambridge, Mass.] Adult male *Anolis extremus* and *A. opalinus* occupied higher and larger perches than female-sized individuals of the same species.--Courtesy/ Paul A. Stewart.

Schwaner, Terry D., and Robert H. Mount. NOTES ON THE DISTRIBUTION, HABITS, AND ECOLOGY OF THE SALAMANDER *PHAEOGNATHUS HUBRICHTI* HIGHTON. *Copeia* 1970(3): 571-573, 2 figs. 3 Sept. 1970. *WR 140: 227*
[Auburn Univ., Auburn, Ala.] "On Alabama coastal plain."

Schwartz, Albert. A SYSTEMATIC REVIEW OF *UROMACER CATESBYI* SCHLEGEL (SERPENTES, COLUBRIDAE). *Tulane Studies Zool. & Botany* 16(4): 131-149, 1 fig. 23 Sept. 1970. *WR 140: 227*
[Miami-Dade Junior Coll., Miami, Fla.]

Scott, Norman Jackson, Jr. A ZOOGEOGRAPHIC ANALYSIS OF THE SNAKES OF COSTA RICA. *Ph.D. thesis, Univ. Southern Calif.* 405 p. 1969. [From Dissertation Abstr. Intern. 30(5B), 1969.] *WR 140: 227*

Sherbine, K. Bruce. FACTORS AFFECTING THE DISPERSION PATTERNS OF CERTAIN PLETHODONTID BROOKSIDE SALAMANDERS ALONG A STREAM IN CENTRAL PENNSYLVANIA. *Ph.D. thesis, Pa. State Univ.* 62 p. 1969. [From Dissertation Abstr. Intern. 30(7B), 1970.] *WR 140: 227*
Field and controlled laboratory experiments were used to evaluate what role temperature, cover location, cover size, and season had on the distribution of three species of plethondontid brookside salamanders. Each species had a distinct pattern. In *Desmognathus o. ochrophaeus* and *D. f. fuscus* patterns varied with season. In *Eurycea b. bislineata* it remained the same. Results indicated that dispersion was most likely related to cover availability, with differential responses to cover related to the ecology of the individual species. Environmental temperature may also be an important factor of dispersion patterns in *D. f. fuscus* ans *E. b. bislineata.*

Spotila, James Robert. THE ROLE OF TEMPERATURE AND WATER IN THE ECOLOGY AND DISTRIBUTION OF SEVERAL SPECIES OF SALAMANDERS OF THE FAMILY PLETHODONTIDAE. *Ph.D. thesis, Univ. Ark.* 169 p. 1970. [From Dissertation Abstr. Intern. 31 (6B), 1970.] *WR 140: 228*

Spotila, James R., and Ronald J. Beumer. THE BREEDING HABITS OF THE RINGED SALAMANDER, *AMBYSTOMA ANNULATUM* (COPE), IN NORTHWESTERN ARKANSAS. *Am. Midland Nat.* 84(1): 77-89, 5 figs. July 1970. *WR 140: 228*
[Mo. Botanical Garden, 2315 Tower Grove Ave., St. Louis.] Abstract: Adult *Ambystoma annulatum* migrate to the breeding pond only in association with at least 1.27 cm (0.5 in) of rain; they do not migrate prior to mid-September. Adults exhibit a complex pattern of migration in the study area. They engage in a mass courtship *(Liebesspiel)* very similar to that of *A. maculatum*. The spermatophore has a wide base, with a short stalk that supports the overhanging sperm cap. Egg laying begins on the night of courtship or the next and is usually completed within two days. Adults leave the pond soon after breeding but may remain active aboveground for at least a week. The courtship behavior, spermatophore, manner of egg deposition and egg mass suggest a close phylogenetic relationship between *A. annulatum* and the *maculatum* group.

Steyn, W., and S. Steyn. NEW DATA ON A SAND-SHUTTLING EYE-POPPING LIZARD. *Madoqua* no. 2. p. 39-44, [9 figs.]. 1970. *WR 140: 228*
[Transvaal Mus., Pretoria, South Africa.] *"Agama makarikarica."*

Tanzer, Ernest C. POLYMORPHISM IN THE *MEXICANA* COMPLEX OF KINGSNAKES, WITH NOTES ON THEIR NATURAL HISTORY. *Herpetologica* 26(4): 419-428, 2 figs. Dec. 1970. *WR 140: 228*
[Univ. Ariz., Tucson.]

Telford, Sam R., Jr. SEASONAL FLUCTUATIONS IN LIVER AND FAT BODY WEIGHTS OF THE JAPANESE LACERTID *TAKYDROMUS TACHYDROMOIDES* SCHLEGEL. *Copeia* 1970(4): 681-688, 2 figs. 12 Dec. 1970. *WR 140: 228*
[Univ. Fla., Gainesville.]

Trueb, Linda, and William E. Duellman. THE SYSTEMATIC STATUS AND LIFE HISTORY OF *HYLA VERRUCIGERA* WERNER. *Copeia* 1970(4): 601-610, 8 figs. 12 Dec. 1970. *WR 140: 228*
[Univ. Kans., Lawrence.]

Van de Bund, C. F. DE NEDERLANDSE AMFIBIEEN. [THE DUTCH AMPHIBIANS.] *Wetensch. Meded. K.N.N.V.* 73: 1-32, illus. 1968. [From Biol. Abstr. 51(18), 1970. In Dutch with English summ.] *WR 140: 228*

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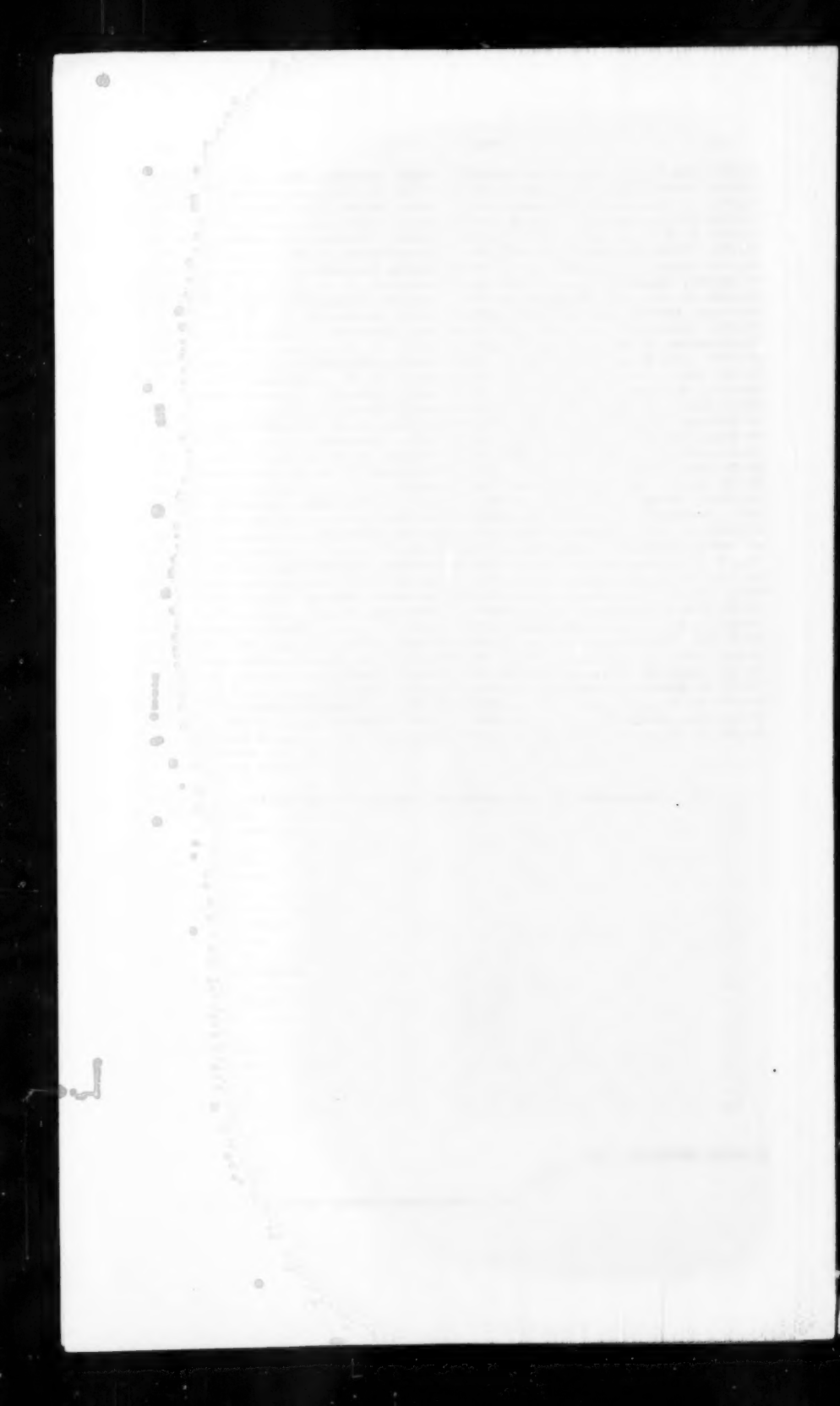

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The Department works to assure the wisest choice in managing all our resources so that each shall make its full contribution to a better United States now and in the future.